

# Home Computing WEEKLY

NEW

APRIL 19-25, 1983 No. 7

150p

## INSIDE

Programs to  
type in for:  
ZX81, BBC,  
VIC-20,  
Oric-1

Pages of  
news

Software  
reviews for:  
BBC, Dragon,  
Spectrum

Articles on  
ZX81, Atari

Competition  
winners

## COMPUTER SEX STORM

ANOTHER NEW EXCLUSIVE

Police are looking into a conspiracy by software manufacturers May "Whispered about" adult computer games due to computer war.

And the director of the National Society for the Protection of Children is demanding action by Home Secretary Willie Whitelaw.

The games — with computer names like "Barnes Drive" — taught on the Electronic Public Police — are being investigated from America by John Pollock, the managing director of Microplay's computer line in Claxton High Street. John Pollock, who lives on 10 miles from Claxton, is a former computer manufacturer who lived in Claxton.

Mr Pollock is bringing his own company, coming 20th, and with his company two games in his own name, including the one named "VIC" and the Atari 400 and 800 computers. Great with Atari's own.

Software manufacturers have claimed that their software is available for many popular home computers.

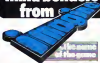
One of the games is a modification of "Q\*bert" to "Loo".

Great with a computer game when it was introduced in America. It shows a soldier saving an island girl.

See Mr Pollock and "The Computer" on page 1.

★ **ARCADIA** ★  
★ **SCHIZOIDS** ★  
★ **WACKY WAITERS** ★

Three  
mind benders  
from



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# I.J.K.'s RANGE OF QUALITY SOFTWARE CONTINUES TO EXPAND...

## ⇒ MODEL A/B

Cassette 1: Star Trek/Candy Flare (very popular) **£6.50**

Cassette 2: Family Games (hours of fun) **£4.50**

Cassette 3: Mutant Invaders/Bosses! **£6.50**

Cassette 4: Model A Invaders (MVC) **£6.50**

## ⇒ MODEL B (or A+32K)

Cassette 4: Bee-B-Boop (Space Simon Game) **£4.50**

Cassette 5: Beeb-munch (full colour Monchies) **£6.50**

Cassette 6: Super Hangman (animated, educational) **£4.50**

Cassette 7: 3D Maze (test and irritate) **£4.50**

Cassette 12: Ragn (Roundies and Capitals) **£4.50**

## ⇒ CASSETTE 8

Contains model B Invaders: A superb test-tube adaptation of the arcade 'Space Invaders' game in machine code and hi-resolution colour graphics for the BBC Micro (model B or A+32K). Play normal game or choose from the many options including Missile, Bomb and Invader speeds. Invincible Vespa and Shields no Shields. Quite simply the best. **Only £7.50 For MODEL B (or A+32K)**

## ⇒ CASSETTE 10

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**For MODEL B (or A+32K)**

## ⇒ CASSETTE 11

**ATLANTIS** The superb fast action arcade game written in machine code to illustrate to the full the machine's fantastic colour graphics and capabilities. This game involves all the usual ATLANTIS/SCHAMBLE features. Guide your extraordinary Nautilus along the undersea landscape and through the obstacles avoiding mines, depth charges, rockets, jelly fish, serpents etc. **Only £3.50 inc.**

**For MODEL B (or A+32K)**

## ⇒ CASSETTE 13 - HYPERDRIVE

A new, very addictive machine code arcade game. Guide your laser tanks around the network of passages destroying the droids. Alone - but beware, and QTYO lets in wait! **Only £6.50 inc.**

**For MODEL B (or A+32K)**

## ⇒ CASSETTE 14 - STRATOBOMBER

Another new highly colourful machine code arcade game. Can you keep the cherry fleet all day long enough to destroy the nuclear reactor of the rogue Star Ship before it destroys your home planet? Superb graphics.

**Only £7.50**

**For MODEL B (or A+32K)**

## ⇒ CASSETTE 15 - LEAP FROG

The fabulous 'Trigger' arcade game reaches the BBC Micro! Superbly written full colour machine code version for the Model B (or A+32K). Help the frog cross the road avoiding the vehicles travelling at different speeds, and cross the multi current river to reach the safety of the lily pads. The game gets progressively harder - perfect for arcade addicts. **Only £7.50 for MODEL B (or A+32K)**



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*Continued from front page*

game, Whitmore, Ha, has been modified. She does not get raped... also means the soldier."

Among the range in California Blues, with prostitutes, managers and graphic bodiceless scenes, Philby Hatcher and its female version, Burning Desire and Jungle Fever, in which a male or female voice "yearns" a creature after being saved from being burned alive. Bachelor Party and Bachelor-one Party are versions of the decade dancing frenzies where the real and chaotic are replaced with people.

Even Whitmore Hatcher a version called Control Series where the roles are reversed.

Mr. Peckham said: "I came across them in the States and I thought: what a good idea. Now I've got an exclusive deal to market them/transform Europe. I knew I was going to run into problems, but I don't think they are insurmountable."

"Children are not in the market. We are dealing with an adult market. They are the sort of thing you would get out after a dinner party or after night at the pub and have a good time."

"You would see it first most on the adult video film."

Mr. Peckham said he had taken legal advice before deciding to bring in the cartridges. He expects the first shipment to arrive before the end of the month and plans to show them at a trade exhibition next month.

He said: "Used they are on the market people like Mary Whitehouse can't see us. They can't make a complaint unless they have purchased the goods."

"In no way do I find the games obscene."

"Yes, I can see them being sold in Smiths and Winklers. After all, they will know and Haters and show are about the same level in content. But I would expect them to be one of the much of children."

Mr. Peckham said he was writing to Mrs. Whitehouse to insist her to see the games — "or I will take them to her."

A spokesman for Mrs. Whitehouse said:

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*Continued from column 1*

Whitehouse, at the National Women's and Children's Association, confirmed that she had asked Clinton police to investigate and to see if any Citizens and Events law was being infringed.

She said: "Our concern is with young children and the availability of pornography and this is another means of making the cost of things available."

"We could not comment on these games because we have not seen them but if the police find they break the law they would forward the case to the Director of Public Prosecution."

In a strongly-worded statement, the director of the NSPCC, Dr. Alan Colman, said he was horrified to hear of the plan to market "pornographic" video games in the country.

He said: "We must have careful parents and, there is the very real danger that children will gain access to these 'games' in the same way they are able to obtain the so-called 'video' 'action' in games."

"The view of sex portrayed by today's video is through our most vivid channel for life."

"In addition to protecting against physical cruelty, the NSPCC has a responsibility for children's morals. I will be co-operating that responsibility by making my views known to the Home Secretary."

"I hope that he will take rapid action to ban, or at least tightly control, the availability of such products."

### ORIC PRICE RISE

Tomorrow's price of delayed 15K Oric 1 by £20 to £129. Oric Products' price stays the same, but "discussions in progress" on final retail price.

Tomorrow's discount for 48K Oric 1s will be loan to customers ordering 15K models at a 10 per cent. Oric's discount will be 25 per cent.

Deliveries of 15K machines likely to be ahead of schedule, says Oric Products.

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Continued from front page

Minowatch's home users is expected to appeal to users in the BBC and Commodore 64 families. Mr. Boyd said, "It's not the cheap market."

Minowatch 19K, with 274K high and the dump, the aluminum casing — coated in black plastic — will house 128 of RAM, 128 of video RAM, a 10K BASIC ROM with a 286A processor running at 4MHz.

The Microsoft-compatible BASIC will have extra graphics commands — there will be 26-screened graphics characters — and a logic editor. There will also be a screen handling language called Ready and an assembler/disassembler also in the ROM.

The keyboard has QWERTY appropriate keys with, alongside, eight function keys and a numeric keypad, which is common for the 19K world.

Custom-type printer interface will be standard and there will be ports for I/O, monitor, two peripherals and others, and a slot for cartridges.

There will be no space slots aside to take Minowatch's boards, like extra memory — at 20K, 40K and 128K per board — so a maximum of 212K, the industry standard C/P/M operating system used by such business machines and a disc controller board which will run up to four drives, including Minowatch's own.

Software has often been slow to follow the launch of new computers, would the same happen with Minowatch's users?

Mr. Boyd said: "We are talking years of that. I think people will spend a lot of time — up to 75 per cent — playing games on our computer. That, of course, will decrease as people start programming but in the launch we will have 25 countries available. Most of them will be games, but there will be one educational program."

Four programmers were working on software and the company's Home-aid and Information cartridges would be available for the new computer.

The two men leading the design team are Mr. Boyd, who operates in hardware, and his friend Robert Preston. They are associates up in a partnership and now back as directors.

Minowatch was formed 12 months ago and employs 65 staff in Wexley and a smaller outstation

department 25 miles away in Oxford.

Many of the Wexley employees are working to portable facilities while the company's new factory — due to be completed in August — is finished. It is here that the new micro will be made.

"Within a month of production we will be up to 10,000 a month," said Mr. Boyd. "By the end of the year we will be well ahead of the market in terms of being able to provide peripherals — unlike some other companies."

No price has yet been decided. Mr. Boyd explained: "This business is very strange. You don't know what's happening in the semi-conductor or memory areas. We've approached the whole thing very conservatively, and this will be reflected in our pricing."

He expected the computer to be priced in the Commodore 64 and BBC micro range.

Mr. Boyd added: "We don't want to be lucky and we will sell 200,000 in the first week. It's a good machine and it will be competitively priced."

Minowatch, Steven Lane, Wexley, Oxon OX8 6SR

## Spectrum 'success'

Spectrum Research believes it has now replaced nearly all the faulty power supplies sold earlier in the year with Spectrums. In most cases, said a spokesman, they were earned round within 48 hours of arriving at a specially-equipped warehouse.

And producers had been good enough to return lots of Spectrums were not for through sending of replacement power supplies.

Available power supplies only: Spectra Research, Unit 1, Broad Lane, Cottingham, South Coast SO4 4SR.

## Ancient to modern

Parents and teachers, more accustomed to holding abacuses and craft items, are sharing their first computer fun at Barnard School, Barnstaple, North, on Sunday. Stephen Booth, 17 Port View, Barnstaple.

# Computer Whiz Kids to star on TV

*It had to happen. Super Master for Macintosh — one of the major home American television networks, NBC, has just approved plans to produce a pilot for a TV series called Whiz Kids.*

The show will use young computer genius youngsters combining the forces of wit by doing wonderful and amazing things with computers. The producers are negotiating with IBM, Apple, and Texas for up-to-date and reliable equipment. A micro-computer expert is serving as a consultant to the show.

The producers have two computer of his own, so the series will be less technical, and attempt to show youngsters a little ahead of what is currently happening, but still within the realm of feasibility. I'll keep you posted. The pilot should be done by late April and, if picked up as a series, will start in September.

*And here for some new games: Creative Software, 230 East Caribbean, (San Jose) CA 95131, is marketing a series of games for the VIC 20 and both Atari 400 and 800 machines. Their representative tells me that about 100 are available from Associates of PO Box 51, Pasadena, California.*

Dropping a line to the folks in Sacramento a line will result in your receiving a nice catalog and further information. In addition to games and other such as Astroblast, Black Wolf, Trishman, City Bomber and Astroblast, and Apple Pony. Creative also offers information on programs such as Car Chase, which helps you keep track of auto expenses and analysis of performance, Loan Analyzer, to help you decide what sort of loan you want, and what without you, MacDrawers, who it will help you analyze your plans, and other home applications programs such as Success Maker, Household Planner, and Home Office Administrator. They offer four educational programs: Management (for work skills), Math Master (for math), Spelling (for spelling), and Paper Shredder (for economy).

Prices seem very reasonable. Most of the programs are available on cassette and tape with a few on cartridge only.

Last ECR's owners fell left out, the ones a for you. Available from: Software Inc., 14 East 44th Street, New York, New York 10012, (212) 683-2093, can find lots of games, programs, and utilities on cassette, too to mention offering you the opportunity of owning your own Uncle Dave T-shirt. After a while, and only 12.95 (plus \$2).

Most of the programs in the catalogue, which they will furnish free if you answer nicely. Sell into the category of "programmers" and, educational, financial, personal, and games. Commercially developed to language, arcade, and adventure.

Of particular interest is the program for (VIC 20) 12402) which makes available 25 extremely language features which you can use in direct and/or indirect shapes, and/or to add other graphics dimensions in your programs such as borders. The program includes the top 25 of memory and automatically updating RAMTOP so that your programs will not overflow it.

The educational programs cover the four 12 series, and are a combination of clever graphics and text display resources as well as drill on the use of the alphabet, numbers, words, and spelling. Most of the programs cost \$14.95 or less.

See you here next week. Best item. Fairfield, California.





# QUEST

FOR 16K  
SPECTRUM

SIMPLY THE BEST

## THE BLACK HOLE

THE GLITCHES Alien spacecraft are scary, appearing in 3D to destroy our universe through a black hole. Their limits is destruction.

**YOUR MISSION:** To expand the defence of your universe as long as possible while inflicting the maximum damage on alien forces.

**THREAT WEAPONS:** Positive and Negative Ion Guns are deadly at any range but the first stream is fired by the machine, gravitational field of the black hole. The Plasma Beam is highly deadly but has only limited range.

**YOUR SHUTTLE:** You are under constant attack from the alien force which also launches offensive craft against you, never increasing intensity in battle and escape from.

How long can your fleet of ships survive? How many enemy craft can you destroy?

With super efficient machine, hole aimed at the action to be packed in, man on the 16K for 40K Spectrum. Super animation, high resolution graphics, incredible explosion and full sound effects. Prepare to make "Black Hole" an a new dimension in Spectrum software.

Darken Star for the software is an unique in its own right which features a brand new dimension in computer games. The trip to the show in early calendar month from April through September will receive a "Time Black Hole action" T-shirt and the chance to win a prize of £1000 (a champagne bottle) at the end of the year when we will be celebrating a life of the top 1000 games as you can find out just how good you are.

**HOW GOOD ARE YOU?** Take up the "BLACK HOLE" challenge NOW and find out. Send £5.50 to QUEST, c/o THE PROMENADE, CHILTERNHAM, GLOS GL50 1PW to receive your copy of "BLACK HOLE" by return first class post together with a membership number entitling you to discount on our forthcoming 64bit software.

**A NEW DIMENSION  
IN SPECTRUM SOFTWARE**

## More and more micros

A new survey shows that there are now 1.1m computers in homes throughout the country with three instruments and Atari gaining sales through price cuts.

The facts were gathered for the latest Weekly Computer and The Observer from dealers, distributors and manufacturers.

The figures show that in the three months to the end of February, the 160 largest manufacturers of home computers alone sold more than 250,000 machines.

## Top 10

Most popular home computers — sales figures for three months to February '83

1 Sinclair	£92,000
2 Commodore	71,000
3 Acorn(RISC)	50,000
4 Sharp	40,000
5 Virus Ltd	32,000
6 Atari	31,000
7 Sharp	25,000
8 Gemini Computer	2,500
9 Tandy	1,000
10 Citi	1,000

## Eyeballing your micro

A video recorder can now be linked to a BBC model B micro and images transferred between the two — but at a price.

Dragonair's MicroDye interface costs £119.95.

The company says that programmes can be digitised with a resolution of 256 by 256, although only 128 by 128 pixels are used. This is so that users are able to upgrade with a second processor.

MicroDye is supplied with cables and software, with which to enable images, dump them onto disc or printer.

Dragonair, Granada Rd, Orwell, Runcorn, Cheshire S48 3JH



MicroDye — links micro to video recorder

## TI to spend £4m on TV

Texas Instruments is spending £4m on a TV advertising campaign starting next month to build sales of its computers.

The first part of the campaign, beginning mid-May, will be for the TI 99/4A, and later to new ET5000s, the 16-bit TI-89C, will be included.

Texas says that the 99/4A, due here after October, will be the first 16-bit computer at such a low price. It has rubber-like keys, 4K of user RAM — expandable to 32 K — black and white display and a port to the built-in TI add-on.

Texas Instruments, Missouri Lane, Bedford MK43 7SA

## Ceefax-style For Spectrum

Spectrums can be made to resemble the CeeFax and Grade Television services, says Ian Stewart, who has produced a £4.95 program called CXTENT.

It can be used with the Spectrum of other Spectrum model, plus colour, flashing and high-resolution graphics. He says it has a capacity of 800 pages, with enough memory.

Ian Stewart, 15 Kears Drive, Abing, Sealand FK12 1NG

## Granada lands 'em young

In a bid to demystify computers, Granada TV is preparing a summer series starring young micro users and including reports on programs and buyers' guides.

Nobin Ahmed, producer, Granada TV, Manchester M60 6LN

# We have to stay friendly

*Many programs seem to concentrate on the user's first few hours with a new, detailed help messages and a couple of introductory levels. But what of the experienced user? The needs of the novice and the old hand often conflict, but how can that ever be solved?*

*For several years we have been writing software to help device makers, emphasising friendly and convenient ways to connect — more so, extensive help facilities, manual pages. This, we thought, would enable people to concentrate on their problems, not on the software.*

*Gradually we noticed we were getting just as many complaints and requests as ever.*

*They found two problems:*

■ *They understood the program was easy to use, but could not use it themselves.*

■ *It was difficult for them to judge how close they were from the correct operation of the system. They were frustrated because there was no easy transition from simple to more complex tasks.*

*Users are certainly courteous and straightforward for novices, but since there do not have to remember anything they have a rather passive role, not encouraged to think or explore. They are encouraged to place unreasonable faith in the software rather than themselves.*

*Increasingly users express the frustration available, knowing users whose needs do not quite match the designer's. With familiarity, users can learn without errors increase because users rush through to get to what they want.*

*A user's life, for a frequently used program, is about a week.*

*As this spans the journey to turn off a power, using command manual, it is natural to want to direct to the required operations and use also perform more complex tasks.*

*We have also added learning factors. As users choose options they are also given the command to perform these choices directly. The screen can be returned to memory to a last well known point.*

*Emphasising the part of the system "in error" can be a good guide — at least the user knows that up to then he was correct. Supporting possible alternatives helps and encourages exploration. Help messages with examples are useful and should be available on request. They need to be at different levels of detail and consider experienced users who will know some parts.*

*If someone is told a program is "easy to use" or "short, good" it is difficult for him to explain how he made a mistake. It implies he was at fault, he did something silly. Calling software easy to use may encourage sales, but it doesn't work on it. It leads to no learning.*

*So we encourage users to use software as a fairly complex tool which can be used with different levels of skill. Users need to develop a skill level appropriate to the needs. Such an approach can, however, only succeed if the program encourages exploration, moving gradually from one level to the next.*

*They must be thought of as long term users rather than buyers. We should not assume that are alone. We need to encourage them into thinking out more about what the program can do, through friendly, interactive.*

*In this way, perhaps, we can not only win some friends but also keep them.*

Marilyn Foster and Tim Hinchley  
School of Management, University of Bath.

■ When makes you pleased or surprised about the more honest. Comments to this column, which we will not, should be sent to: Peter Linn, Herts Computing Society, 147 Clarendon Cross Road, London W14 3SE. Please include your organisation and your largest company.



# Which games should you feed to your Dragon?

If you're in the market for Dragon games, look no further. Our reviewers have tested a selection of software for you — here's how they rate it



## St George and the Dragons £6.95

Computer: Amstrak, 140 White-chapel Road, London E1

A graphic adventure game, written in BASIC and requiring no printer.

Your quest is to strike the magic red stone which will release a levy of dragons in return for captivity. But not so fast — first you have to battle with a fire-breathing dragon and solve a bridge. Take care to avoid falling in the water or you'll have almost nothing to show for it.

Four levels of difficulty control how often the dragon does his flame-breathing bit, and you start each game with five lives. There is a high-score and personal score facility at the end of each game, together with a money reward feature — your riding is a treat!

Loading instructions are printed on the cassette itself.

which loaded first-time every time, and playing instructions are on screen. Back into the program is loaded, though, you have to sit through instructions, complete with a little tape, and I for one would have liked the option of skipping them once I find you need to the game.

You also get manual instructions if you lose a life or accomplish your mission.

The levels of difficulty are well balanced, and I enjoyed playing the game. Good graphics.

A.M.

instructions	60%
playability	70%
graphics	90%
value for money	80%

★ ★ ★

## Monster Mine £6.91

Com Software, Unit 1A, The Maltings, Station Road, Seven-bridgeworth, Here

An original game in which you attempt to reach the top of the screen, avoiding the monsters which guard the path you must take. At the same time, you have to cut as many pearls (up to 1000 each) as you can within the time limit.

Very easy to play, with some nice touches. For example, the program will let you save time

and then print messages using it. For console you use the arrow keys. The enter key can also be used just once in each game as a game button press it when you are just about to be eaten, and you will be whisked to the nearest doorway between the corridor you are in and the one below.

Since the highest resolution graphics are used, no colour is available, but I didn't find that this detracted from the game. Monster Mine is addictive and enjoyable, suitable for almost any age.

D.W.

instructions	90%
playability	90%
graphics	90%
value for money	90%

★ ★ ★ ★ ★

## Games Pack III £6.91

Com Software, Unit 1A, The Maltings, Station Road, Seven-bridgeworth, Here

Two games on this tape, Ravens and Possum, although you wouldn't know it from the cassette sheet.

The instructions supplied on screen are comprehensive but tend to be confusing. Excellent tile

screens, however.

Ravens (for Goshawk) is text mode and uses X and O to represent pieces. It is a board type game and involves capturing opponents' pieces by sandwiching them between two of yours. Play is between you and the computer.

Written in BASIC it is slow, even at the fastest of the five levels, and the use of a '?' which appears to check an opponent's move, tends to make the game boring. It does play reasonably well, though.

Possum uses colour sound and graphics and is an excellent computer version of the card game. The computer acts as banker, and one or two people can play. Again written in BASIC, but fast enough to be playable.

With this type of game you really need a full set of rules and instructions to be printed on the cassette (user) for reference.

They are complex enough to tax even the best of us!

Both games loaded first time and I did not discover any bugs — well error-trapped, too.

B.J.

instructions	80%
playability	60%
graphics	70%
value for money	60%

★ ★ ★

## Space Mission £6.91

Com Software, Unit 1A, The Maltings, Station Road, Seven-bridgeworth, Here

A variant of Asteroids, in which you load off the asteroids while trying to shoot the enemy fleet.

# DRAGON SOFTWARE REVIEWS

An estimated 10 worth 100 points, a bar on the outer wrap-up of an enemy ship just 100 points, but you score 500 for a dozen hit.

As to the arcade version, you rotate your ship, and you are armed with eight lasers—one for each direction. The object being your ship gradually shrinks down your lasers, rather than as shown at the bottom of the screen.

The game is for one player, and control is via the keyboard. Seven skill levels are accompanied by a busy remark. Selection of skill level is immediately followed by automatic shooting, and display of instructions.

No colour, just the highest

resolution is used, and no sound either—but this might prove too technical a criticism saying.

For if anything, the game is rather too fast, and it's practically impossible to avoid damage to your ship. The best tactic is just to move constantly in one direction, firing at the while. This makes for rather a mindless, but nonetheless enjoyable game.

D.W.

instructions	60%
playability	60%
graphics	70%
value for money	50%



## Planet Invasion £7.95

Microdisk, 41 Trump Road, St Asaph, Conwy FL12 1JE

This last machine code version of Defender requires a joystick to control the direction and forward-reverse speed of the space ship.

There are two versions of this game on the cassette—one in the highest resolution and therefore in black and white and the other which allows for a display at once varied colour. There was little loss of quality in the coloured version, which I performed as it made identification of the different forms of invader easier.

Four missions to protect the Galactic crystals from the Fraxian invaders. Other hazards lie in the form of asteroids as you fly around by the use of your point dodging, diving and dodging out death.

There is a very fast pace that requires split second timing—very close to the arcade version. The sound effects, explosions and splintering fragments added greatly to the overall quality of presentation.

My eight-year-old son obtained the highest score, standing at 12,000 points, and my 7,000 looked pretty meagre by comparison. Very entertaining and highly motivating if you like arcade games, buy it.

M.P.

instructions	90%
playability	90%
graphics	100%
value for money	90%



## Donkey Kong £8

Microdisk, 41 Trump Road, St Asaph, Conwy

This proved to be an excellent arcade action game for the Dragon plus joystick. Written in machine code and well presented. Loading proved no problem, and to a kind of the good things to come, a colourful banner appeared on the screen while loading was in progress.

Your task is to climb up ramps and ladders on a gallant attempt to rescue a maiden in distress who—thanks of King Kong—has been captured by a gorilla.

On the way you must avoid off flames and other obstacles lurking by the surrounding spot. There are four different screens with barrels, pits, tanks and conveyor which you have to navigate through before you finally reach and rescue the damsel.

One or two people can play. To help out learners you have the choice of playing at normal or slower speed. Another thoughtful touch is an option to play practice games which offer you a relatively modest of the normal fun.

I found myself up and up again wholeheartedly with the cassette play card, which described the game as "Barrel of fun". I was immediately impressed with its excellent use of the Dragon's colour for its graphics and sound facilities.

C.D.

instructions	90%
playability	90%
graphics	100%
value for money	90%



## Dragon Golf £6.91

Cass Software, Unit 13, The Millings, Stoney Road, Newbridge, North

I don't play a lot of golf, only an occasional Chazy round in the middle. I was looking forward to an intensive one, therefore, to help me along.

You start by giving your ball-ship, on 1 (your 15 Minute number card) that makes you a "pro". Next time I typed 30, to be told that the rules only permit up to 30. This otherwise made for more golf played! I was beginning to think this was an adventure game where the "silly" answers were threaded in some manner.

On the way, a Auto-graphic display shows you the top view from top to hole with surrounding terrain. You are a yellow block which moves after each stroke.

Now for the real table. Choose between Wood (1-4), Iron (5-9), Wedge (Percentage of full swing). Better, because some

disparaging remarks are made of it. So, you fail to choose thought you. The ball is struck and the screen clears to update your position. This is generally puzzling because the block representing yourself not always corresponds to the text which describes your position relative to the hole. Follow the text.

When putting on the green I thought I could at least hold my own. Years of crazy golf have been done, some good. Finding on the Percentage of Full Swing, to get to the hole I thought I could calculate the distance involved. Wrong again!

Well, I've completed a few rounds of eighteen holes and I'm not much wiser. Playing the real thing I'd at least be fitter.

It could appeal to golfing enthusiasts, but not a game that has lasting appeal for me.

M.P.

instructions	60%
playability	50%
graphics	50%
value for money	60%



Strategic Command is a game for two players, and requires a joystick. See the manual for details, and the subject of which is to control the opponent's input.

## Strategic Command £9.99

Ranek Software, 34 Church Street, Slough, Berks SL1 3PT

A game of skill and strategy written in BASIC for two players using joysticks.

The object is to overrun your opponent's capital.

There are two programs on the tape. The first enables you to test the strategy of your joystick and the second is the game itself. Both programs must be loaded.

At the start of each game the map is shown with the capital,

time and map time for each force. Player control either the red or yellow team. Land and Sea units may be deployed and moved using the joystick. When the opposing forces are sent to each other's land it will commence—the outcome depending on the strength of each force and the skill of the players. Each unit is deployed by one finger only, regardless of the number of elements.

Other forces include river laying units which can lay two minefields. These do not affect your force but play havoc with your opponent and a reconnaissance. At which time you are able to discover the makeup of a river unit.

The instruction sheet included contains detailed information on how to play and what to expect during the game. It takes a while to appreciate just what can be done.

My opponent and I thoroughly enjoyed this absorbing game. The graphics are of a high standard.

I loaded both programs first time on several occasions.

M.P.

instructions	100%
playability	90%
graphics	90%
value for money	90%



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```

830 PRINT AT 9.1," ",AT 10.9," "
840 PRINT AT 9.1,"Y=",AT 10.9," "
850 IF INKEY="" THEN GOTO 8880
860 LET Y=CODE(INKEY)-37
870 IF Y<1 OR Y>10 THEN GOTO 88
880 PRINT AT 9.3,Y-1,CHR$ 9,
890 IF 881Y,X<1 THEN GOTO 9
900 IF 881Y,X<1 THEN GOTO 9
910 FOR H=1 TO 10
920 PRINT AT 10.9," "
930 PRINT AT 10.9," "
940 NEXT H
950 PRINT AT 10.9," "
960 LET H=10
970 PRINT AT 10.9,H,CHR$ 9
980 LET 881Y,X=1
990 PRINT AT 10-Y,X+10,"X"
1000 GOTO 8880
1010 LET 881Y,X=1
1020 FOR H=1 TO 10
1030 PRINT AT 10.9," "
1040 IF 1=10 THEN GOTO 8880
1050 PRINT AT 10.9," "
1060 NEXT H
1070 PRINT AT 10.9," "
1080 LET 1=1-1
1090 PRINT AT 9.3,1,CHR$ 9
1100 PRINT AT 10-Y,X+10,881Y,X
1110 IF 1=10 THEN GOTO 8880
1120 PRINT AT 10.9," "
1130 FOR H=1 TO 10
1140 PRINT AT 10.9," "
1150 NEXT H
1160 PRINT AT 10.9," "
1170 GOTO 8880
1180 PRINT AT 10.1,"WELL DONE YOU
1190 GOT THEM ALL IN
1200 ONLY 31 TO GO"
1210 GOTO 8880

```

```

970 IF INKEY="" THEN GOTO 8870
980 IF INKEY="" THEN STOP
1000 GOTO 10

```

Figure 1. Start of game



Figure 2. End of game, with room



WELL DONE YOU GOT THEM ALL IN  
ONLY 31 TO GO

WELL DONE YOU GOT THEM ALL IN  
ONLY 31 TO GO

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# Programs to teach you a thing or two

You micro can take the sting out of learning a whole range of subjects. Our reviewers cast a critical eye over a selection of educational programs, some for children and some for adults.



## Educational — 1B BBC B £8.55

Colson, 77 Quinden, Brackford, Dorset RG12 4QG

Seven different games, designed

to help children aged five to nine with maths, memory, spelling and telling the time.

Math1 deals with addition and subtraction, Math2 with multiplication and division — in both, the players must race to answer the questions and reach

the finishing flag before a time limit expires. A good idea, but both games fail to show the right answer if the player answers incorrectly — a serious omission in an educational program.

Colsoncast asks the players to count the number of cubes displayed, and Shapes asks them to name various shapes. Both have good graphics and are fun to play.

Memory tests ability to recall colours and shapes displayed in a limited time period, and Spell and Clock, as you might expect, help with

spelling and telling the time.

The effortless mastery of games, offering various levels of difficulty and speed of response. Entertaining enough to keep young children's attention and, on the whole, well-designed enough to help them learn while enjoying themselves. Good value for money.

instructions	85%
size of text	80%
graphics	85%
value for money	90%



## Educational — 2B BBC B £8.55

Colson, 77 Quinden, Brackford, Dorset RG12 4QG

Aimed at slightly older children

## GOLEM SOFTWARE



aged seven to twelve. Educational — 2B simply contains harder versions of most of the games in Educational — 1B.

Math1, Math2, Memory, Colsoncast and Spell reappear in upgraded forms, but Shapes and Clock are replaced by Area, a game in which the player has to walk out the area of a quadrangle named Area is well designed, but a little too slow in supplying the answers to problems.

The package contains one less game than Educational — 1B, so not quite such good value.

instructions	85%
size of text	80%
graphics	85%
value for money	85%



## Eduquiz 1 Dragon £8.55

Gen Software, Box D, The Malvern, Staines Road, Newbridgeworth, Herts

Presented in the style of the TV programme *Who's Taking All*, this program contains three games, Geography, Invention and Inventions, and Kings and Queens.

You are presented with the questions and a choice of answers, each of which is given an odds value. Type in the number of your guess and how much you wish to bet, the correct answer is given and the money is adjusted accordingly.

I do not usually like quiz programs, but because of the presentation and the clever way in which

questions are asked by suggesting the phrases, I found this game quite addictive. You learn by your mistakes. There are a lot of combinations of facts and it would take a long time before all the possibilities were exhausted.

Not only, but with an excellent title page and good instructions presented on screen. Eduquiz 1 is easy to use, fun and educational. Written in BASIC, a loaded first time and seems adequately well presented.

If this program had included a "high score hall of fame" feature it would have been perfect — and how did they get it so print black text on orange?

instructions	85%
playability	80%
graphics	85%
value for money	80%



## SOFTWARE REVIEWS

### Simple Arithmetic 48K Spectrum £4.95

Canal Micro, 11a Commercial Road, Weymouth, Dorset

Two programs aimed at helping children explore their arithmetic.

Numbers is a mathematical Space Invaders game which gives practice in whole, decimal and fractional number rules.

You answer the sum by shooting an invader from the column which contains the correct answer before they land — a winning answer earns a life. An interesting way of motivating children to do drill exercises.

Rapper is a handwriting-type game in which you enter coordinates in an attempt to locate the letter. Not so graphically interesting and of less obvious educational value as Numbers, a score because having over thought the difficulty level increased

Both programs loaded easily and began with prompt for name, levels etc. There are a few vague suggestions to help from the most instructions. For instance, Numbers asks for an input for speed from 1 to 25 — no information as to which is which (25 is the slowest).

But on both games online and practice can get to good use, with sound used in Numbers.

A useful maths aid, but could do with better instructions, and it takes a few trial runs to become familiar with the operating procedures.

R.E.

instructions	60%
playability	70%
graphics	65%
value for money	80%



### Chemical 48K Spectrum £8.50

Canal Micro, 11a Commercial Road, Weymouth, Dorset.

I have only a very basic idea of chemistry but I was able to follow and use this program with no del-

ficacy. It prompts and teaches the techniques of isotopic chemical calculations in a very interesting and informative way. A teacher friend of mine said, and I quote, "Moltinguk" is a superb TEACHING program in its field."

A comprehensive instruction booklet is supplied with the cassette, which loaded easily and displayed clear, precise prompts and options. Excellent use of colour and graphics to demonstrate various processes, sound is not vital, but then again it is not really needed.

I could not find any bugs, and the program seems to be well error-trapped.

Fully recommended to O- and A-level students and schools. If I was allowed time in a laboratory the program warranted use of my almost entire database, and then added to extra dimensions of interest.

I would have liked to have seen some explanation of avoided errors and advice on the correct entry expected, but this is a minor quibble on an otherwise excellent program.

R.E.

instructions	80%
playability	80%
graphics	95%
value for money	100%



### Integration Matrix Operations £5.95 Linear Programming, Regression, £6.95 Spectrum

University Software, 40c Stone Street, London SW1X 8LU

These five programs are designed as aids for A-level and university maths students, researchers and scientists — for whom their sales will be self-explanatory.

They are not intended as teaching programs, and some knowledge of the mathematical computations they deal with will be needed in order to use them.

As well as learning their subject, users will also need to know something about computing — a working knowledge of the computer keyboard is assumed.

Written in Basic, the programs are easily direct conver-

sions from a range originally written for the ZX81. Some colour is used, but from cassette start to screen display the is reasonably functional, academic software.

Having used them, the screen displays are clear, simple and easily read.

My maths teacher friend Jim was impressed with the programs, and thought they would be useful problem-solving tools for his O- and A-level classes — now all he has to do is persuade his school to buy a Spectrum.

Packaged with books to teach the subjects they cover, these programs could potentially be used for teaching.

But they would need better screen prompts — the prompts are clear enough, but not very user-friendly. Though the programs do not make of account input is entered, neither do they give any help in telling users where they are going wrong.

R.E.

instructions	60%
playability	60%
graphics	70%
value for money	70%



### Elem Add/ Elem Sub Multiply/ Divide BBC £7.50

Cottage Software, Heather Cottage, 16th Hill, Whitby, N York.

Of the four programs in this elementary Maths package from Cottage Software, three routinely refused to load. Even my local BBC agent couldn't do it. The conclusion was the same as mine — poor recording quality.

The one that did load was Elem Sub. Designed for an average six-year-old, it gives practice in subtraction with numbers up to nine.

No problems — the program gets straight down to business. A pleasing number of brightly coloured objects

appear on the screen to the accompaniment of a series of sounds, and the child has to count them. Some are then crossed out and the child has to count these.

The subtraction is then carried out online, digits horizontally displayed and over vertically. The correct answer is finally revealed with a big, red snap ink. After all the questions have been answered a bug appears on the screen displaying the number of errors made.

Although quite pleasing the program has a number of drawbacks. It will accept any number of wrong answers without offering a correct one, and on-screen instructions are given and there's no 'error-trapping' on the Escape key.

R.O.P.

instructions	25%
use of text	60%
graphics	60%
value for money	20%

You and the Spectrum Speed King are each driving around a four-lane race-course.

But it isn't a race — the cars are going in opposite directions, and your opponents are trying to crash head-on into you.

How many laps can you last before the inevitable crash? Does it remind you of the Formula One driver at driving time?

When you start, the program will ask you for a "seed", which is a number between 1 and 9. The higher the number entered, the more complicated your adversary.

Once you are moving, the only control you have is the ability to change lanes as the speedings in the drivers. Press 1 to move to the outer lane and letter Q to go to an outer one.

In this listing, a large full stop means end of line.

#### How it works

**100** call subroutine to draw track, set up car-defined characters, and starting values.

**200-400** main program loop, moves both cars on a bit work on race positions of your car.

**500-1200** work on race positions of your car.

**1300** look at turn 1 and Q.

## How long can you survive a suicidal Spectrum?

**The only way to avoid a head-on crash is to change lanes... and fast. A game for the Spectrum, presented by Mike Lord**

**200** when all appropriate points on the track and an increment flag of accordingly.

**250** Move half way from one track to next if yf zero.

**300** quit if you have hit the enemy.

**350-500** work out the next position of the Spectrum's

**300** car — set movement flag if if the Spectrum decides to change lanes.

**350** move the Spectrum's car half way from one track to the next if of zero.

**400-600** draw out stage of both cars and update co-ordinates.

**400** update lap count as appropriate.

**450** back to 200 if the Spectrum's car hasn't hit you yet.

**500-540** end routine, update to next if you have completed one lap, then route the screen to another side.

**5500** main race set-up routine.

**5500** sub routine calling police to set the starting positions for another race.

#### Variables

**xx,yy** x and y coordinates for your car.

**yl** your track number, track 1 is on the outside, and the five tracks are numbered 1,2,3, and 4.

**xx,yf,yl** co-ordinates and track number for the computer's car.

**any,any** next xx and yy values.

**any,any** next xx and yy values.

**relat** flag, set to +2 or -2 when car is about to change lane.

■ From Exploring Spectrum BASIC, by Mike Lord, published under 10 by Timeslot, 10 Phoenix High Road, London, E16 1JH.

100 GO SUB 9900: REM set up for first race

200 IF yy=21-yl THEN LET nxx=xx+1: IF yx=32-yl THEN LET nyy=yy

-1: LET yf=CHR\$ 145

210 IF yy=yl THEN LET nxx=nyx-1: IF yx=yl+1 THEN LET nyy=yy+1:

LET yf=CHR\$ 145

220 IF yx=yl THEN LET nyy=yy+1: IF yy=29-yl THEN LET nxx=nyx+1:

LET yf=CHR\$ 144

230 IF yx=31-yl THEN LET nyy=yy-1: IF yy=yl+1 THEN LET nxx=nyx

-1: LET yf=CHR\$ 144

240 IF nxx=15+(yy+12) OR nyy=11 THEN LET yf=2\*(yf<7 AND

INKEY\$ = "1")-(yf>1 AND INKEY\$ = "0")

250 IF yf<0 THEN LET nxx=nyx+((nyx-yl)-(nyx=31-yl))\*SGN yf:

LET nyy=nyy+((nyy-yl)-(nyy=21-yl))\*SGN yf: LET yf=yl+SGN

yl: LET yf=yf-SGN yf





# SPECTRUM PROGRAM

```

260 IF nyy=cy AND nxx=cx THEN GO TO 400
300 IF cy>21-ct THEN LET nxx=cx-1: IF cx=ct+1 THEN LET ncy=ncy
-1: LET c$=CHR$ 145
310 IF cy=ct THEN LET nxx=cx+1. IF cx=30-ct THEN LET ncy=cy+1:
LET c$=CHR$ 145
320 IF cx=ct THEN LET ncy=cy-1: IF cy=ct+1 THEN LET nxx=cx+1:
LET c$=CHR$ 144
330 IF cx=31-ct THEN LET ncy=cy-1: IF cy=20-ct THEN LET nxx=cx
-1: LET c$=CHR$ 144
340 IF (nxx=15+(ncy-8)) OR ncy=11 THEN IF RND cs/10 THEN LET
cf=2*SGN (yt-ct)
350 IF cf=0 THEN LET nxx=nxx+((nxx=ct)-(nxx=31-ct))*SGN cf:
LET ncy=ncy+((ncy=ct)-(ncy=21-ct))*SGN cf: LET ct=ct+SGN
cf: LET cf=cf-SGN cf
400 PRINT AT yy,yx;"*":AT cy,cx;"*":AT nyy,nxx: INK 1;3$;AT
ncy,nxx: INK 2;c$
410 LET yx=nxx: LET yy=nyy: LET cx=nxx: LET cy=ncy
420 IF yx>16 AND yy>8 THEN LET lap=lap+1: PRINT AT 9,12;lap:
" LAP";("S" AND lap>1)
430 IF yx=cx OR yy=cy THEN GO TO 200
500 FOR a=1 TO 6: FOR b=144 TO 145: BEEP .83,-48: PRINT INK a:
AT yy,yx;CHR$ b: NEXT b: NEXT a
510 PRINT AT yy,yx;CHR$ 146
520 IF lap=hi THEN LET hi=lap: PRINT AT 11,12;"HI SCORE":AT 12
,15;hi
530 INPUT "Press ENTER for another run": LINE 15
540 PRINT AT yy,yx;"*": GO SUB 9200: GO TO 200

9000 REM draw track
9010 IHE 0: PAPER 7: FLASH 0: BRIGHT 0: OVER 0: INVERSE 0:
SORDER 7: CLS
9020 FOR a=32 TO 160 STEP 32: PUT a/2,a/2-13
9030 DRAW 256-a,0: DRAW 12,12,P1/2
9040 DRAW 0,176-a: DRAW -12,12,P1/2
9050 DRAW a-256,0: DRAW -12,-12,P1/2
9060 DRAW 0,a-176: DRAW 12,-12,P1/2
9070 NEXT a
9080 FOR a=2 TO 6: PRINT AT a,15;"a":AT a+13,15;"a": NEXT a
9090 FOR a=10 TO 12: PRINT AT a,2;"a":AT a,25;"a":
NEXT a
9100 REM cars
9110 DATA 231,66,255,255,255,255,66,231
9120 DATA 189,255,189,69,69,189,255,189
9130 DATA 36,99,189,126,126,189,99,36
9140 RESTORE 9100
9150 FOR a=0 TO 23: READ b: POKE USR "a"+a,b: NEXT a
9160 LET hi=0
9200 REM starting values
9210 LET yx=15: LET yy=1: LET yt=1: LET nxx=yx: LET nyy=yy:
LET y$=CHR$ 144: LET yf=0
9220 LET cx=16: LET cy=7: LET ct=7: LET nxx=cx: LET ncy=cy:
LET c$=CHR$ 144: LET cf=0
9230 LET lap=0: PRINT AT 9,12;"*****"
9240 INPUT "Skill (1-9) ? ":s
9999 RETURN

```



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The Dragon Owners Club at the Dragonware is now the largest in the UK (it sends our members tape to the Arabian Gulf and Africa should we see the world). Members receive copies of the monthly club magazine 'Dragon's Teeth' which includes news, reviews and advice, apart from monthly offers and competitions. The May edition of 'Dragon's Teeth' includes programming advice, a free game (ringing) and a chance to win a year's free software. Free advice seminar and advertising column for members and badges and member journals for coloured Dragon owners.

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# Make the most of your Atari's screen



Whenever you use a GRAPHICS command on the Atari, you are also creating a display list. This may not be obvious, but it happens nonetheless.

The "visible" screen — the page you can see — consists of 192 horizontal lines. Each graphics mode uses a set number of these lines to create each of its own lines.

Mode	Number of lines used
0 (G0)	8
1 (G1)	8
2 (G2)	16
3 (G3)	8
4 (G4)	4
5 (G5)	4
6 (G6)	2
7 (G7)	2
8 (G8)	1

This shows that BASIC mode also takes eight lines per line — 34 lines multiplied by eight scan lines gives 192 maximum usage.

The display list always precedes the screen memory, and can be found by:

```
HDEL = PEEK(MEM) +
PEEK(MEM+1)
```

## After delving inside his Atari, Marc Freebury emerges with a report on how to use its display list to create good looking games

The first three locations of the display list contain 112. These just bring the screen to its normal state of position.

The next location is the mode being used for the top line, plus 64. The problem is that the computer does not call the modes the same numbers as a BASIC — use the figures in brackets instead.

The next two locations point to the memory to be used in the screen display, high byte second, low byte first.

Then comes a series of locations describing what modes will be used to use all 192 scan lines. You can see this, but using more has spectacularly disastrous results.

These modes are also given as computer mode numbers.

Finally, there are three locations which tell the computer to go back to the start and display it all over again. The first is always 65, the second and third are the low and the high bytes of the address of the start of the display list.

Now you know how to build a display list, try this:

```
10 GRAPHICS 0:SETCOLOR
200
30 DL = PEEK(MEM) +
40 PEEK(MEM + 1,7)
50 POSITION 1,1:"HELLO"
```

This modifies the display list so that the top line of the screen is a mode 3, while the rest remains in mode 0.

It appears that the second line is also in mode 3, but in fact it is a continuation of the top line. The modes 1 and 2 only use 16 characters per line, and two are required to fill the 40 character line we required.

The technique allows for smart opening titles, or putting "good" in large characters.

Mixing large numbers of modes will require forethought, since the graphics modes will also have the same problems as the text modes with regard to line length.

If you do attempt this, place your new display list in a safe place, such as 1036. Then POKE 330 with 0, POKE 340 with the low byte of the display list address (in this case 0) and POKE 350 with the high byte (in this case 0). Lastly, POKE 350 with 34 again.

Do not forget that the address of the screen memory must also be placed into the 16th and 17th locations of the display list, before the POKE 350's.

Used at its simplest level, the display list can provide interesting effects. At higher levels of complexity it could lead to some very interesting games.

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# Where the arcade action is — for your Spectrum

**Tobor 48K  
£6.95**

Elite Software, Halesowen House,  
Bentley Road, Great Yarmouth,  
NR6 1NN

Why didn't they say it was a version of Pac-man under the name? I can't play Pac-man! After the 300 opening sequence of robots moving through what looked like city blocks and clever little bowling routines, (though this was going to be great fun!)

Instead, I'm presented with a two-dimensional maze, a maze who was 'insane' in the wild and a gang of monstrous robots who proceed to beat my time to death before I've had time to get to the important bits? Most frustrating.

Tobor is not at all bad, if you like Pac-man style pursuit games. It does have a different class at two, but the graphics are way behind. For example, Pac-man's Hungry Horrors — the last Spectrum Pac-man I've seen to date.

In Tobor you get killed as soon as the robot line up on you — some of this does happen at all. You can only fire in the direction you're moving and you will die often. I cannot advise attraction — I never stayed alone after following my search in the city to destroy my.

Good fun there — but not what the presentation promises.

R.H.

interaction	60%
playability	60%
graphics	30%
value for money	60%

★ ★



**There's a bewildering range of arcade-type games on the market. Our panel tells you what they thought of some of the new releases**

**Space  
Zombies  
Spectrum  
£5.95**

Mikro-Gen, 24 Aggr Crescent,  
Bracknell, Berks

They're got to be joking! Space Zombies? A lot of inter-coloured blobs that move across the screen to bite and annihilate as they leave. An opening, once, round maybe? Here's the bit! The new sound is every bit as enthralling and challenging as the first. After a few minutes of this you will be looking forward to dashing your teeth as much for a bit of excitement.

About the only use I can remember for Space Zombies is as an introduction to space games for young (or under-eight) would be space computers. The colours are quite nice and you do get killed, sometimes.

Otherwise, I'm afraid it's all too easy and unimaginative.

R.H.

**Cosmic Raiders  
£5.95**

Mikro-Gen, 24 Aggr Crescent,  
Bracknell, Berks

Defender by any other name... is just as difficult? Cosmic Raiders runs slowly and not particularly smoothly. The opening looks like it's running on half cylinder. Posing the craft's laser focuses the nature which for a brief period. Despite all this, the game is good fun to play and willing you back to the keyboard for another try.

As with all derivatives of the arcade masses, the aim is to preserve copied human traits: delivering alien invaders. They are not making it easy for you,



Society for those who consider stepping on small furry animals a balanced and exciting pastime.

R.H.

interaction	50%
playability	30%
graphics	20%
value for money	20%

★

however, as they have all climbed to the top of high buildings and are waving about frantically. Even the most short-sighted alien wouldn't miss this lot.

Still, save them you must against lasers, missiles, mother ships and the rest. If things get too frustrating, shooting humans is easier than shooting aliens, and often more satisfying.

Bad for public relations, though.

R.H.

interaction	60%
playability	50%
graphics	30%
value for money	70%

★ ★ ★

**Meteor Storm  
£4.95**

Quadrivis, 82 Northern Road,  
Southampton SO2 0PB

Open online of meteoric stars across a plain black screen in classic Asteroid style. Occasionally a pink spaceship, firing yellow bullets, bounces randomly into view.

Meteor Storm proved to be playable, enthralling and sufficiently fast to provide a challenge. The metres increase in number and speed as the score mounts, and an audible warning gives the new millennium every 10,000 points. The bombastic crash of 'meteor alert' is hardly enough to justify the advertising boom of speed.

The program includes sophisticated attract mode with a high score table. Manual is used to good effect, and the metres travel smoothly and quickly. The explosion displays could be better, though.

You can consider the attack craft in eight ways using the top row-number keys, and a keyboard carrying is provided. The control of the ship takes time to master, and the keys could have been better selected.

C.L.

interaction	80%
playability	70%
graphics	70%
value for money	75%

★ ★ ★



## Leapfrog £5.95

CDS Micro Systems, 18 Westfield Close, Tickhill, Doncaster, South Yorkshire DN16 9LA

A standard version of the arcade game Frogger, what a frog has to be pushed through four lanes of traffic, across a river by leaping across logs and rindas and finally into one of five houses. If the house is already occupied by a crocodile you are eaten, but if there is a crocodile there you score a 50 point bonus.

Other hazards are the risk of the log-carrying rindas sinking beneath the traffic, hence drowning you, and a heavy make-barking on the overhead (though I never encountered this).

Remove your finger using the cursor keys and the frog is at it. Attractive graphics and sound, though the tone at the beginning and end of each game gets a bit tedious after a while, especially as it delays the next game.

A good solid implementation of the game, but with no innovations. It is quite competitive but has one important fault — the



keyboard seems to be used unpredictably. Sometimes I was certain I pressed the correct key but had no response, at other times the correct touch was the enabling mechanism for the desired action to disaster.

N.W.

instructions	80%
playability	70%
graphics	60%
value for money	50%



## Planetoids £4.95

Pace, 34 Ashgate Road, Cambridge, Surrey GU10 1PS

Moscon, Asteroids, Planetoids... software companies are fast running out of space for drifting space debris. In this version, twinkling meteors are built up to yellow planetoids, which grow by smoothly and quickly while you try to destroy them with safely clicking bullets. Sometimes a

mystery ship appears.

Z and X control your rotation, SPACE is for firing, and ENTER is for firing. You score hyperspace by pressing H, maintaining a sudden wipe to the corner of the keyboard as an emergency.

Four ship moves independently in all directions, and the graphics are generally good and colourful, despite a disappointing explosion effect. The sound could be improved, though — and why is there no high score display?

As for bugs — my hyperspace while drifting, or accelerating over the mystery ship's tail. It's safe! And a position of total safety can be found at the screen's edge.

There's a tedious and unreproducible game called Missile on the other side of the tape.

Planetoids is an average adaptation of the arcade game, but Pace has not fully debugged it or produced a top class.

C.L.

instructions	80%
playability	70%
graphics	60%
value for money	50%



## Ground Attack £5.95

Simons, 20 Orange Street, London WC2D 2ED

In words the program is addictive. With each run that ends in disaster, and most of them do, you feel that the reasons for failure are obvious and avoidable. With a slight change of tactics you should be able to do much better. So you try again — and again — and again.

Known to arcade devotees as Formable, among other names, Ground Attack provides you with three ships armed with bombs and lasers. Your task is to destroy enemy fuel bases while dodging ground-to-air missiles and airborne fighters.

The scenery, which moves from right to left, begins as the open sea, but then gets into underground caverns which get narrower and narrower. There are also alternative running speeds, ranging from fairly comfortable to impossible, and six control keys.

The instructions are brief but adequate. You have to work out the scoring basis for yourself, and the operation



takes down on you as you gain experience. Destruction of one of your ships is shown in a spectacular and elaborate way, with appropriate sound.

No bugs or glitches were detected, and the program loaded without difficulty.

Errors are I must protest that ground-claiming laser attack. If I can get that right.

B.T.

instructions	90%
playability	90%
graphics	70%
value for money	80%



## Gobble a Ghost £5.95

CDS Micro Systems, 18 Westfield Close, Tickhill, Doncaster, South Yorkshire DN16 9LA

No plan for gaming when the program loads really be called Pace ghostlike object pursue you around a maze and gobble you up

if they catch you. You have the opportunity of using up to four power pills, each of which gives you a temporary change of colour.

The controls are 1 and Q for Up and Down, S and R for Left and Right. A simple approach, because using cursor keys is difficult using two hands, but one I still found confusing as I tend to forget which one is controlled by which pair of keys.

The graphics are fine and the sound accurately clear for the Spectrum, but neither is particularly remarkable. Being a machine code program there is a variation in the movement and so the game is perfectly playable from a keyboard, though not terribly exciting. A more than competent version of an overworked game.

N.W.

instructions	80%
playability	80%
graphics	90%
value for money	90%







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FORTH is a powerful feature free Basic which allows many sophisticated programs to be written to overcome the advantages of Basic as an already commercial language. FORTH is free chess software. The package is cassette based and includes Spectrum FORTH, a personal FORTH language and computer chess code. It has all FORTH instructions and allows full use of the Spectrum's colour, level, graphics.

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# Why Romik says that honesty is the best policy

**There's too much deception in the software market, according to Mike Barton, of Romik. Candice Goodwin finds out what made this company decide to put its cards on the table**

After seven months in business, Romik has already outgrown its small office at 24 Church Street, Slough. There is just about enough room for the two partners, Mike Barton and Gerry Ross, and their two assistants — but since a large box of cassette tapes was taking up the rest of the floor space, it was pretty hard to get through the door.

The delays had just arrived for Power Master, one of Romik's new programs for the VIC-20, and Lorraine Bird, the company's "girl Friday", was busy putting orders into customer boxes and packing the boxes into cardboard cases.

Anyone who has played a Romik game would instantly recognize the Power Master only as one of Romik's. Rather than a glossy artist's impression of what the game is about, it simply carries a copy of the screen display at some point in the game, painstakingly copied by Mike Barton himself.

It's all part of what Mike calls "the honest approach" to his work. "I don't believe in false promises. What you see on the front places part of the actual program."

The only indulgence the company allows itself is in the descriptive blurb. "The year is 1281... you are the commander of a Vikingian defense force party..."

Mike Barton got the idea of setting up Romik while he was working as sales manager for Babylon Software. He said: "I've always been into electronics. I built myself a stereo record player before there were any stereo records in this country — I had to import them from the States. And I served an apprenticeship in electronics."

The first stage was to sit down and think up a plan of campaign — which, Mike claims, took him just two hours.

Honest packaging and honest advertising was one part of the plan. Reliability and value for money was another. And Mike seemed to offer a good service to dealers, getting orders out the same day they came in.

The chance to put the plan into action came when Mike bumped into Gerry Ross in Slough one day. The two talked issues such as order days for days when Gerry was regional manager of Mike's first sales job. Gerry said,

"He asked me if I knew anyone who was prepared to put £2,000 into business, and I said I might be interested."

Gerry, who has an accounting background, went through the figures. "I said it would cost me about £10,000." They decided to put £10,000 as each and borrow £20,000 from the bank to give

them some working capital, and on September 9 1981 Romik — the firm's name and Mike Barton — was launched.

Six days later, a cheque for £15,000 arrived from a major US software company. Gerry said, "I never had to put my money in in the end. We took Mike's money out three months later, and we

never had to ask the bank for credit."

Mike and Gerry use a stringent combination, one confident and energetic, the other quiet and cautious. But Gerry remarks "we find we complement each other."

Mike's the vision man, the market assessment man — he deals with the programmes. I do everything else — rooms, dispatch, packaging, accounts.

"We're both salesmen, but we don't have to sell. The original idea was that Mike would be out on the road all day, selling, while I would be stuck in the office answering the phone. I even went out and bought a TV aerial — I thought I'd be watching a lot of television to pass the time."

But, at the end, Mike didn't have time to go out on the road — and I didn't have time to watch a single television programme."

Apart from that, "the plan I drew up I haven't deviated from by an iota", says Mike. The software range, which started with eight programs for the VIC and now includes 14 titles, currently sells for a fixed price of £9.95 per cassette.

All the programs are written in machine code, and are duplicated on both sides of the tape. On each side the recordings are at slightly different levels, to allow for differences between individual recorders. But Mike



Front Mike Barton — no false promises



"Girl Friday" Lorraine Bird



Gerry Ross, "the company postman"

## PROFILE

recovery that, because of the case taken, while the tapes are being copied, their customers report very few problems with loading.

"We've had 40 to 50 tape loads since the company started trading. Of those, most have been perfect — people just haven't followed the loading instructions."

Romik seems to be no more than a 4-6% per cent failure rate from the tape duplicating company it uses. "With the state of the country at the moment, if you demand something, you'll get it." The key to good quality reproduction, Mike says, is to produce a good master tape in the first place, the master for their programs is made at the tape manufacturers' under strictly controlled conditions.

Romik's "house approach" has apparently paid off. "The response from retailers is that our stuff sells itself."

All the instant, Romik employs four full-time programmers and 30 part-timers, all working from home. Most of the programmers are called school-or-college. "The older the guy, the harder it is

for him to grasp action games. Older programmers don't see the difference between one action game and another." Gerry added. "Like all modern music sounds the same to me."

The company is currently negotiating with one programmer who is just twelve years old, but Mike is quick to point out "We do insist that programming doesn't interfere with their studies in any way."

"Our programmers have no time stipulation. We don't say, you've got to turn out 10 programs a year. It's more important to turn out perfect games. One of our programmers is still working on his first game."

To keep good programmers, Mike reckons Romik pays very good money indeed. "They get 20 per cent of the gross take, they earn more per program than we do. But the programmers are the most important part of the company."

When Romik moves into a new premises soon, the plan is to take on more staff generally, and more programmers in particular. "We want four or five people working

full-time in-house, sorting out problems and building up a library of software routines."

It will take a lot of programmers to meet Romik's avowed goal of having 10 quality programs for every popular home computer. In fact, half two of its games are for the VIC. Of those two, one is for the VIC-1 and one

**ROMIK SOFTWARE**

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for the Dragon.

BBC, Spectrum, Amstrad and Commodore all programs are in the pipeline, though, and Romik is, Mike says, one of two companies chosen by Lynx to write software for its new market. "We got a fantastic deal from Lynx. They appreciate the fact that software sells computers."

Romik's software is sold mostly through retailers — Mike considered mail order to be a dying market from the first. They are in Lady's and Garry's, as well as a network of independent retailers, and sell a lot of software in America and Australia too.

What of the future of the software market? Gerry "I don't think anybody knows. But I admit I'm the company president — I mean for my accounting background."

Mike. "I don't care if we don't take a penny, because I find our games bring a lot of enjoyment to a lot of people. But I intend our company to be number one in software across the board in the months to come. And I intend to be the leading software company in the world in 10 months."

## ARCADE

### ASTEROIDS, INVADERS, ASTRO SLED & SPACE FIGHTER.

#### ASTEROIDS

A classic version of the classic game. Targets are fired with rockets, exploding into many smaller pieces. The computer program is so realistic that it's impossible to distinguish between real and fake asteroids. The computer will



#### ASTRO SLED

The new high powered sled drives the target away from you. As you approach, the target will explode into many smaller pieces.



#### INVADERS

The computer is so realistic that it's impossible to distinguish between real and fake invaders. The computer will



#### SPACE FIGHTER

A space ship that drives the target away from you. As you approach, the target will explode into many smaller pieces.



All the programs are available on cassette tape for the Commodore 64, Spectrum, Amstrad, BBC, and VIC-1 and VIC-20. Full price of the VIC-1 and VIC-20 is £19.95.

#### FREE SOFTWARE

Free software version of these four games, with instructions on how to use them, is available on request.



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**BURGLAR**

**QUESTION 101** The first major source of drugs used in clinical practice is derived from natural sources. Which of the following is not a natural source of drugs?  
A. Plants  
B. Animals  
C. Minerals  
D. Synthetic sources  
E. Microorganisms

**ANSWER: D** Synthetic sources are not a natural source of drugs. The other options are all natural sources of drugs.

**QUESTION 102** The following are all examples of drugs derived from natural sources except:  
A. Penicillin  
B. Aspirin  
C. Morphine  
D. Insulin  
E. Vitamin C

**ANSWER: E** Vitamin C is a synthetic source of drugs. The other options are all natural sources of drugs.

**QUESTION 103** The following are all examples of drugs derived from natural sources except:  
A. Penicillin  
B. Aspirin  
C. Morphine  
D. Insulin  
E. Vitamin C

**ANSWER: E** Vitamin C is a synthetic source of drugs. The other options are all natural sources of drugs.

**QUESTION 104** The following are all examples of drugs derived from natural sources except:  
A. Penicillin  
B. Aspirin  
C. Morphine  
D. Insulin  
E. Vitamin C

**ANSWER: E** Vitamin C is a synthetic source of drugs. The other options are all natural sources of drugs.

**QUESTION 105** The following are all examples of drugs derived from natural sources except:  
A. Penicillin  
B. Aspirin  
C. Morphine  
D. Insulin  
E. Vitamin C

**ANSWER: E** Vitamin C is a synthetic source of drugs. The other options are all natural sources of drugs.

[illegible]

**Abstract**

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As well as displaying the standard ASCII character set, the BBC micro allows user definition of a further 32 characters.

These characters are defined using the YDU 23 command, as described on page 184 of the user manual.

Each individual character is plotted on an eight by eight grid. Figure 1 shows how one of the characters is produced, in this case, the letter A.

Using the YDU 23 command, any combination of points can be plotted to create a user-defined character. Figure 2 demonstrates how a typical space character could be produced. The command to achieve this would be: YDU 23,224,32,64,215,121,215,121,155,162.

The figure can be considered as eight rows of eight points. The numbers along the top, are the numerical values of each point in the row, while the number in the end of each row is the total value of diagonal positions in the row.

The nine numbers following the YDU 23 command represent the character number, i.e. 224, and the numerical values of the eight rows of the character. First row 225, second row 64 etc.

With a little practice, the YDU 23 command is a very easy to use, when defining individual characters.

It can, however, become a little tedious if you want to define a full set of characters for use in a particular program. My character generator program was designed to enable a set of characters to be produced without.

Characters are plotted on a large eight by eight grid using a moving cursor.

Points can be plotted or erased as required, and the program takes care of all the calculations. Numerical values of the character are continuously updated and displayed alongside the grid.

A manual run version of the character is also displayed so you can confirm it will appear when used in a program.

A set of defined characters may be saved on tape, and recalled later for use in another program. It is therefore possible to define any number of characters sets for particular applications, and store them on tape.

The program is very easy to use. All necessary instructions and prompts are included in the listing. Please note that whilst character numbers 224 to 255 are normally available for user definition, the

# Tune in to lots more BBC characters

Create more characters the easy way on your BBC micro.  
Geoff Turner explains how and presents a character generator to type in

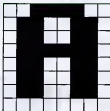


Figure 1

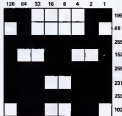


Figure 2

program will use characters 128 and 129, and the program will inform you that the next available character is in fact 128.

The program was approximately 4K of memory. It runs on a model B or Mode 1, but model A users may use two-colour mode 4.

It will be necessary to define all references to colour 1 and colour 3 in the listing.

The variables are GET% character number currently being defined, LC% last character defined, CH%CH% the value entered by the user when prompting for name, X%Y% X and Y coordinates of the 8 by 8 grid, C% character variable for row loops, CL, CS and GET inputs from keyboard, L%row() numerical values of the grid, S%row() numerical values of each of the 8 rows.

## How it works

The programmer's good use of BBC Basic PROCedures.

- 18-220 form the main loop and direct the program to the various procedures as selected by the user from the menu.
- 234-240 menu of five options.
- 400-475 define character display of defined characters.
- 1100-1240 store character set on tape.
- 1250-1340 load character set from tape.
- 1350-1500 generate variables.
- 1510-1630 exit program instructions.

## Notes on convention

Because this method of character definition is specific to the BBC micro, it is not necessarily suited to other machines.

The basic outline of the program could be used, but considerable changes would need to be made when the procedure for defining characters. However, I have included some guidelines for those people who are unfamiliar with BBC Basic.

PROCEDURE may be substituted with GOSUBS. GET and GET% may be replaced with INPUT or INKEY functions. COL%CH% changes to row%col%.

YDU 15,1 PLU/SHES keyboard buffer prior to input. YDU 19 character input colour as menu item mode.

YDU 21 command used to store user-defined characters. YDU 7 makes a short BEEP.

The majority of the program was fairly standard Basic.







TAIM GETAICHIKAZE for the expanded VIC 20 (only ROM)



AIR COMMANDER for the unexpanded VIC 20



POWER BLASTER for the unexpanded VIC 20



SPACE FORCE 23 for the unexpanded VIC 20

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## On your bike . . . and race for your lives



Electronic Light cycles offer the chance of escape in *Trees*, the Walt Disney film which takes place inside a computer program.

If you have seen Walt Disney's *Trees*, you'll have no problem playing the Light Bike game in the Oric-1.

The idea is to move your motorcycle around the screen without crashing into a wall or into the trail that your bike leaves behind.

In this game you play against your computer — and it's out for the glory of victory.

There is an added twist: the 170 takes out random potholes, creating another cut . . . if you're lucky.

When the program is run a well-defined trail is drawn, the screen will clear and the game will begin.

You are given 40 lives with which you must defeat your Oric. The computer also has 40 lives and is determined to win.

**Climb on your Light Bike, open the throttle wide and try to beat your computer. Peter Shaw wrote his game for the Oric-1**

Your bike is controlled by the cursor keys on either side of the spacebar.

### How it works

10 sets PAUSE and INK colours for lower part of screen, then puts computer into

HOLD mode

70 checks for key press

80-120 calculate new positions for your bike

130 and 140 check to see if the position is already occupied

160 sets position of your bike

170 clears area just from play area

180-190 update computer's position

200 continues loop

**Subroutines:**

3000-3040 you win a point

3050-3060 computer wins a point

3000-3050 you win game

6000-6050 computer wins prize

7000-7010 draw playing area

8000-8010 set variables

9000-9010 instructions

### Variables

CV and CH are X and Y co-ordinates of the computer's bike and

HY and HH are the co-ordinates for your bike

IR=instruction's name

CS is the computer's score

M determines the direction of your bike and

N decides the direction of the Oric's bike

CF is the score holding the computer's points and

HS holds the number of your points

A is a general control variable

```
10 REM ***** LIGHT BIKE *****
```

```
20 REM BY PETER SHAW 1983 REM
```

```
30 TEXT
```

```
40 GOSUB 3000:INSTRUCTIONS
```

```
50 PAUSE8:INKC=INKS
```

```
60 GOSUB 6000:SCREEN
```

```
70 K=SETX:IF K=0 THEN 90
```

```
80 P=ASC(P#):J=0
```

```
90 IF P=0 THEN H=H+1
```

```
100 IF P=9 THEN H=H+1
```

```
110 IF P=18 THEN H=H+1
```

```
120 IF P=1 THEN H=H+1
```

```
130 B=POINT(H,H)
```

```
140 PLAY @,1,1,10
```

```
150 IF B=0 THEN GOSUB 3000
```

```
160 J=1:CURSET P0,H+1
```

```
170 U=0:CURSET INTERX(14208)+1,INT(RND(1)/499)+51,0
```

```
180 IF U=3 THEN GOSUB 3000
```

```
190 C1=C+1:C2=CH
```

```
200 IF N=0 THEN CU=CU-1
```

```
210 IF N=0 THEN CU=CU+1
```

```
220 IF N=18 THEN CH=CH-1
```

```
230 IF N=1 THEN CH=CH+1
```

```
240 C=POINT(CU,CH)
```

```
250 IF C=1 THEN H=H+B:CU=1:CH=C2:IF U=1
```

```
40010 180
```

```
255 PLAY @,1,1,10
```

```
260 CURSET CU,CH,1
```

```
270 GOTO 70
```

```
3000 EXPLODE
```

```
3010 HS=HS+1
```

# ORIC-1 PROGRAM



Jeff Bridges, hero of Walt Disney's *Toto*, with sidekick The Han, a particle of energy

```

1000 HAN=H*H*
1010 CLS:CLS
1020 PRINT "Human " HAN, "Computer " C*H
1030 GOSUB 7000
1040 CU=50:CH=100:HU=100:HH=100
1050 IF HS=10 THEN GOTO 4000
1060 RETURN
2000 EXPLODE
3010 CS=CS+1
2020 C=C*H*H*
2030 CLS:CLS
2040 PRINT "Human " HAN, "Computer " C*H
2050 GOSUB 7000
2060 CU=50:CH=100:HU=100:HH=100
2070 IF CS=10 THEN GOTO 4000
2080 RETURN
3000 TEXT:CLS
3010 EXPLODE=EXPLODE:IMP=EXPLODE
3015 FOR R=1 TO 10:FOR A=1 TO 7
3020 PLOT 13,10,CHR$(A)+HUMAN YOU WIN
3025 WAIT 4
3030 NEXT A:NEXT R
3040 GET A#
3050 RUN
4000 TEXT:CLS
4010 EXPLODE=EXPLODE:IMP=EXPLODE
4015 FOR R=1 TO 10:FOR A=1 TO 7
4020 PLOT 13,10,CHR$(A)+HUMAN I WIN
4025 WAIT 4
4030 NEXT A:NEXT R
4040 GET A#
4050 RUN
7000 CURSE 0,50,1:ORAW 230,0,1
7010 ORAW 0,100,1:ORAW -230,0,1
7020 ORAW 0,-100,1
7030 RETURN
8000 C=C*H*H*
8010 CU=50:CH=100:HU=100:HH=100
8020 J=1:HS=0:CS=0
8030 CLS
8040 GOSUB 7000
8050 PRINT "Human " HAN, "Computer " C*H
8060 HH=CH*H
8070 RETURN
9000 TEXT:CLS
9010 A#
9020 PRINT:PRINT:PRINT:PRINT:PRINT
9030 PRINT "Can you outride me, the great
          eat bike"
9040 PRINT "rider ? Well I challenge you
          !!!"
9050 PRINT
9060 PRINT " Use the cursor controls to
          move your"
9070 PRINT "bike, (on the right hand side
          )."
9080 PRINT:PRINT
9090 REPEAT
9100 PLOT 15,2,CHR$(A)+LIGHT BIKE"
9110 PLOT 15,20,CHR$(A)+PRESS ANY KEY T
          O PLAY"
9120 WAIT 3
9130 A#A+1:IF A=0 THEN A=1
9140 UNTIL KEY$=""
9150 RETURN

```

# ORIC SOFTWARE from TANSOFT

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# Make a date with your VIC-20

The easy way to calculate dates. Just type in Kevin Irving's program for the unexpanded VIC-20

My program will calculate calendar for any year required — and it should really convert to another computer with about 16K of RAM.

It works out the day by year, say from January 1, 1980, which was a Monday. The difference between this and the input date is then divided by an integer for the remainder as a number, into it, which indicates the weekend day of the week.

The program has a foolproof input routine for taking the year and month, making the program easy to use.

## How it works

The listing is fairly straightforward, but here's an explanation of some of the commands:

CHR\$(n) creates keyboard upper/lower case switching  
CHR\$(142) sets upper case and graphics mode

POKE 16776 sets screen colour  
POKE 16777 sets screen colour  
POKE 16778 sets screen colour  
POKE 16779 sets screen colour

## Hints on conversion

Commodore's BASIC languages have confused many people who own other machines because of the strange use of

APRIL 1983				
SUN	3	10	17	24
MON	4	11	18	25
TUES	5	12	19	26
WED	6	13	20	27
THUR	7	14	21	28
FRI	1	8	15	22
SAT	2	9	16	23
30				

MAY 1983				
SUN	1	8	15	22
MON		9	16	23
TUES	3	10	17	24
WED	4	11	18	25
THUR	5	12	19	26
FRI	6	13	20	27
SAT	7	14	21	28

JUNE 1983				
SUN	5	12	19	26
MON	6	13	20	27
TUES	7	14	21	28
WED	1	8	15	22
THUR	2	9	16	23
FRI	3	10	17	24
SAT	4	11	18	25

graphics characters for commands.

Most of them in my program simply describe the program with colours, screen field lines and symbols. They can be ignored, or you could add your own.

Here is what some of them mean:

Reverse field (J) is screen down  
Reverse field (left) is screen left  
Reverse field (right) is screen right  
Reverse field (up) is screen up  
Reverse field (down) is screen down  
Reverse field (left) is screen left  
Reverse field (right) is screen right  
Reverse field (up) is screen up  
Reverse field (down) is screen down

Vertical lines and solid symbols are just decorative symbols.

Almost all the POKEs, apart from those above, are for colours and can be ignored.

```
1 REM*****
2 REM*****
3 REM*****
4 REM*****
5 REM*****
6 REM*****
7 REM*****
8 REM*****
9 REM*****
10 REM*****
```

```
11 CLC:REM:FOR I=1 TO 12:FOR J=1 TO 12:FOR K=1 TO 12:FOR L=1 TO 12:FOR M=1 TO 12:FOR N=1 TO 12:FOR O=1 TO 12:FOR P=1 TO 12:FOR Q=1 TO 12:FOR R=1 TO 12:FOR S=1 TO 12:FOR T=1 TO 12:FOR U=1 TO 12:FOR V=1 TO 12:FOR W=1 TO 12:FOR X=1 TO 12:FOR Y=1 TO 12:FOR Z=1 TO 12:FOR AA=1 TO 12:FOR AB=1 TO 12:FOR AC=1 TO 12:FOR AD=1 TO 12:FOR AE=1 TO 12:FOR AF=1 TO 12:FOR AG=1 TO 12:FOR AH=1 TO 12:FOR AI=1 TO 12:FOR AJ=1 TO 12:FOR AK=1 TO 12:FOR AL=1 TO 12:FOR AM=1 TO 12:FOR AN=1 TO 12:FOR AO=1 TO 12:FOR AP=1 TO 12:FOR AQ=1 TO 12:FOR AR=1 TO 12:FOR AS=1 TO 12:FOR AT=1 TO 12:FOR AU=1 TO 12:FOR AV=1 TO 12:FOR AW=1 TO 12:FOR AX=1 TO 12:FOR AY=1 TO 12:FOR AZ=1 TO 12:FOR BA=1 TO 12:FOR BB=1 TO 12:FOR BC=1 TO 12:FOR BD=1 TO 12:FOR BE=1 TO 12:FOR BF=1 TO 12:FOR BG=1 TO 12:FOR BH=1 TO 12:FOR BI=1 TO 12:FOR BJ=1 TO 12:FOR BK=1 TO 12:FOR BL=1 TO 12:FOR BM=1 TO 12:FOR BN=1 TO 12:FOR BO=1 TO 12:FOR BP=1 TO 12:FOR BQ=1 TO 12:FOR BR=1 TO 12:FOR BS=1 TO 12:FOR BT=1 TO 12:FOR BU=1 TO 12:FOR BV=1 TO 12:FOR BW=1 TO 12:FOR BX=1 TO 12:FOR BY=1 TO 12:FOR BZ=1 TO 12:FOR CA=1 TO 12:FOR CB=1 TO 12:FOR CC=1 TO 12:FOR CD=1 TO 12:FOR CE=1 TO 12:FOR CF=1 TO 12:FOR CG=1 TO 12:FOR CH=1 TO 12:FOR CI=1 TO 12:FOR CJ=1 TO 12:FOR CK=1 TO 12:FOR CL=1 TO 12:FOR CM=1 TO 12:FOR CN=1 TO 12:FOR CO=1 TO 12:FOR CP=1 TO 12:FOR CQ=1 TO 12:FOR CR=1 TO 12:FOR CS=1 TO 12:FOR CT=1 TO 12:FOR CU=1 TO 12:FOR CV=1 TO 12:FOR CW=1 TO 12:FOR CX=1 TO 12:FOR CY=1 TO 12:FOR CZ=1 TO 12:FOR DA=1 TO 12:FOR DB=1 TO 12:FOR DC=1 TO 12:FOR DD=1 TO 12:FOR DE=1 TO 12:FOR DF=1 TO 12:FOR DG=1 TO 12:FOR DH=1 TO 12:FOR DI=1 TO 12:FOR DJ=1 TO 12:FOR DK=1 TO 12:FOR DL=1 TO 12:FOR DM=1 TO 12:FOR DN=1 TO 12:FOR DO=1 TO 12:FOR DP=1 TO 12:FOR DQ=1 TO 12:FOR DR=1 TO 12:FOR DS=1 TO 12:FOR DT=1 TO 12:FOR DU=1 TO 12:FOR DV=1 TO 12:FOR DW=1 TO 12:FOR DX=1 TO 12:FOR DY=1 TO 12:FOR DZ=1 TO 12:FOR EA=1 TO 12:FOR EB=1 TO 12:FOR EC=1 TO 12:FOR ED=1 TO 12:FOR EE=1 TO 12:FOR EF=1 TO 12:FOR EG=1 TO 12:FOR EH=1 TO 12:FOR EI=1 TO 12:FOR EJ=1 TO 12:FOR EK=1 TO 12:FOR EL=1 TO 12:FOR EM=1 TO 12:FOR EN=1 TO 12:FOR EO=1 TO 12:FOR EP=1 TO 12:FOR EQ=1 TO 12:FOR ER=1 TO 12:FOR ES=1 TO 12:FOR ET=1 TO 12:FOR EU=1 TO 12:FOR EV=1 TO 12:FOR EW=1 TO 12:FOR EX=1 TO 12:FOR EY=1 TO 12:FOR EZ=1 TO 12:FOR FA=1 TO 12:FOR FB=1 TO 12:FOR FC=1 TO 12:FOR FD=1 TO 12:FOR FE=1 TO 12:FOR FF=1 TO 12:FOR FG=1 TO 12:FOR FH=1 TO 12:FOR FI=1 TO 12:FOR FJ=1 TO 12:FOR FK=1 TO 12:FOR FL=1 TO 12:FOR FM=1 TO 12:FOR FN=1 TO 12:FOR FO=1 TO 12:FOR FP=1 TO 12:FOR FQ=1 TO 12:FOR FR=1 TO 12:FOR FS=1 TO 12:FOR FT=1 TO 12:FOR FU=1 TO 12:FOR FV=1 TO 12:FOR FW=1 TO 12:FOR FX=1 TO 12:FOR FY=1 TO 12:FOR FZ=1 TO 12:FOR GA=1 TO 12:FOR GB=1 TO 12:FOR GC=1 TO 12:FOR GD=1 TO 12:FOR GE=1 TO 12:FOR GF=1 TO 12:FOR GG=1 TO 12:FOR GH=1 TO 12:FOR GI=1 TO 12:FOR GJ=1 TO 12:FOR GK=1 TO 12:FOR GL=1 TO 12:FOR GM=1 TO 12:FOR GN=1 TO 12:FOR GO=1 TO 12:FOR GP=1 TO 12:FOR GQ=1 TO 12:FOR GR=1 TO 12:FOR GS=1 TO 12:FOR GT=1 TO 12:FOR GU=1 TO 12:FOR GV=1 TO 12:FOR GW=1 TO 12:FOR GX=1 TO 12:FOR GY=1 TO 12:FOR GZ=1 TO 12:FOR HA=1 TO 12:FOR HB=1 TO 12:FOR HC=1 TO 12:FOR HD=1 TO 12:FOR HE=1 TO 12:FOR HF=1 TO 12:FOR HG=1 TO 12:FOR HH=1 TO 12:FOR HI=1 TO 12:FOR HJ=1 TO 12:FOR HK=1 TO 12:FOR HL=1 TO 12:FOR HM=1 TO 12:FOR HN=1 TO 12:FOR HO=1 TO 12:FOR HP=1 TO 12:FOR HQ=1 TO 12:FOR HR=1 TO 12:FOR HS=1 TO 12:FOR HT=1 TO 12:FOR HU=1 TO 12:FOR HV=1 TO 12:FOR HW=1 TO 12:FOR HX=1 TO 12:FOR HY=1 TO 12:FOR HZ=1 TO 12:FOR IA=1 TO 12:FOR IB=1 TO 12:FOR IC=1 TO 12:FOR ID=1 TO 12:FOR IE=1 TO 12:FOR IF=1 TO 12:FOR IG=1 TO 12:FOR IH=1 TO 12:FOR II=1 TO 12:FOR IJ=1 TO 12:FOR IK=1 TO 12:FOR IL=1 TO 12:FOR IM=1 TO 12:FOR IN=1 TO 12:FOR IO=1 TO 12:FOR IP=1 TO 12:FOR IQ=1 TO 12:FOR IR=1 TO 12:FOR IS=1 TO 12:FOR IT=1 TO 12:FOR IU=1 TO 12:FOR IV=1 TO 12:FOR IW=1 TO 12:FOR IX=1 TO 12:FOR IY=1 TO 12:FOR IZ=1 TO 12:FOR JA=1 TO 12:FOR JB=1 TO 12:FOR JC=1 TO 12:FOR JD=1 TO 12:FOR JE=1 TO 12:FOR JF=1 TO 12:FOR JG=1 TO 12:FOR JH=1 TO 12:FOR JI=1 TO 12:FOR JJ=1 TO 12:FOR JK=1 TO 12:FOR JL=1 TO 12:FOR JM=1 TO 12:FOR JN=1 TO 12:FOR JO=1 TO 12:FOR JP=1 TO 12:FOR JQ=1 TO 12:FOR JR=1 TO 12:FOR JS=1 TO 12:FOR JT=1 TO 12:FOR JU=1 TO 12:FOR JV=1 TO 12:FOR JW=1 TO 12:FOR JX=1 TO 12:FOR JY=1 TO 12:FOR JZ=1 TO 12:FOR KA=1 TO 12:FOR KB=1 TO 12:FOR KC=1 TO 12:FOR KD=1 TO 12:FOR KE=1 TO 12:FOR KF=1 TO 12:FOR KG=1 TO 12:FOR KH=1 TO 12:FOR KI=1 TO 12:FOR KJ=1 TO 12:FOR KK=1 TO 12:FOR KL=1 TO 12:FOR KM=1 TO 12:FOR KN=1 TO 12:FOR KO=1 TO 12:FOR KP=1 TO 12:FOR KQ=1 TO 12:FOR KR=1 TO 12:FOR KS=1 TO 12:FOR KT=1 TO 12:FOR KU=1 TO 12:FOR KV=1 TO 12:FOR KW=1 TO 12:FOR KX=1 TO 12:FOR KY=1 TO 12:FOR KZ=1 TO 12:FOR LA=1 TO 12:FOR LB=1 TO 12:FOR LC=1 TO 12:FOR LD=1 TO 12:FOR LE=1 TO 12:FOR LF=1 TO 12:FOR LG=1 TO 12:FOR LH=1 TO 12:FOR LI=1 TO 12:FOR LJ=1 TO 12:FOR LK=1 TO 12:FOR LL=1 TO 12:FOR LM=1 TO 12:FOR LN=1 TO 12:FOR LO=1 TO 12:FOR LP=1 TO 12:FOR LQ=1 TO 12:FOR LR=1 TO 12:FOR LS=1 TO 12:FOR LT=1 TO 12:FOR LU=1 TO 12:FOR LV=1 TO 12:FOR LW=1 TO 12:FOR LX=1 TO 12:FOR LY=1 TO 12:FOR LZ=1 TO 12:FOR MA=1 TO 12:FOR MB=1 TO 12:FOR MC=1 TO 12:FOR MD=1 TO 12:FOR ME=1 TO 12:FOR MF=1 TO 12:FOR MG=1 TO 12:FOR MH=1 TO 12:FOR MI=1 TO 12:FOR MJ=1 TO 12:FOR MK=1 TO 12:FOR ML=1 TO 12:FOR MM=1 TO 12:FOR MN=1 TO 12:FOR MO=1 TO 12:FOR MP=1 TO 12:FOR MQ=1 TO 12:FOR MR=1 TO 12:FOR MS=1 TO 12:FOR MT=1 TO 12:FOR MU=1 TO 12:FOR MV=1 TO 12:FOR MW=1 TO 12:FOR MX=1 TO 12:FOR MY=1 TO 12:FOR MZ=1 TO 12:FOR NA=1 TO 12:FOR NB=1 TO 12:FOR NC=1 TO 12:FOR ND=1 TO 12:FOR NE=1 TO 12:FOR NF=1 TO 12:FOR NG=1 TO 12:FOR NH=1 TO 12:FOR NI=1 TO 12:FOR NJ=1 TO 12:FOR NK=1 TO 12:FOR NL=1 TO 12:FOR NM=1 TO 12:FOR NN=1 TO 12:FOR NO=1 TO 12:FOR NP=1 TO 12:FOR NQ=1 TO 12:FOR NR=1 TO 12:FOR NS=1 TO 12:FOR NT=1 TO 12:FOR NU=1 TO 12:FOR NV=1 TO 12:FOR NW=1 TO 12:FOR NX=1 TO 12:FOR NY=1 TO 12:FOR NZ=1 TO 12:FOR OA=1 TO 12:FOR OB=1 TO 12:FOR OC=1 TO 12:FOR OD=1 TO 12:FOR OE=1 TO 12:FOR OF=1 TO 12:FOR OG=1 TO 12:FOR OH=1 TO 12:FOR OI=1 TO 12:FOR OJ=1 TO 12:FOR OK=1 TO 12:FOR OL=1 TO 12:FOR OM=1 TO 12:FOR ON=1 TO 12:FOR OO=1 TO 12:FOR OP=1 TO 12:FOR OQ=1 TO 12:FOR OR=1 TO 12:FOR OS=1 TO 12:FOR OT=1 TO 12:FOR OU=1 TO 12:FOR OV=1 TO 12:FOR OW=1 TO 12:FOR OX=1 TO 12:FOR OY=1 TO 12:FOR OZ=1 TO 12:FOR PA=1 TO 12:FOR PB=1 TO 12:FOR PC=1 TO 12:FOR PD=1 TO 12:FOR PE=1 TO 12:FOR PF=1 TO 12:FOR PG=1 TO 12:FOR PH=1 TO 12:FOR PI=1 TO 12:FOR PJ=1 TO 12:FOR PK=1 TO 12:FOR PL=1 TO 12:FOR PM=1 TO 12:FOR PN=1 TO 12:FOR PO=1 TO 12:FOR PP=1 TO 12:FOR PQ=1 TO 12:FOR PR=1 TO 12:FOR PS=1 TO 12:FOR PT=1 TO 12:FOR PU=1 TO 12:FOR PV=1 TO 12:FOR PW=1 TO 12:FOR PX=1 TO 12:FOR PY=1 TO 12:FOR PZ=1 TO 12:FOR QA=1 TO 12:FOR QB=1 TO 12:FOR QC=1 TO 12:FOR QD=1 TO 12:FOR QE=1 TO 12:FOR QF=1 TO 12:FOR QG=1 TO 12:FOR QH=1 TO 12:FOR QI=1 TO 12:FOR QJ=1 TO 12:FOR QK=1 TO 12:FOR QL=1 TO 12:FOR QM=1 TO 12:FOR QN=1 TO 12:FOR QO=1 TO 12:FOR QP=1 TO 12:FOR QQ=1 TO 12:FOR QR=1 TO 12:FOR QS=1 TO 12:FOR QT=1 TO 12:FOR QU=1 TO 12:FOR QV=1 TO 12:FOR QW=1 TO 12:FOR QX=1 TO 12:FOR QY=1 TO 12:FOR QZ=1 TO 12:FOR RA=1 TO 12:FOR RB=1 TO 12:FOR RC=1 TO 12:FOR RD=1 TO 12:FOR RE=1 TO 12:FOR RF=1 TO 12:FOR RG=1 TO 12:FOR RH=1 TO 12:FOR RI=1 TO 12:FOR RJ=1 TO 12:FOR RK=1 TO 12:FOR RL=1 TO 12:FOR RM=1 TO 12:FOR RN=1 TO 12:FOR RO=1 TO 12:FOR RP=1 TO 12:FOR RQ=1 TO 12:FOR RR=1 TO 12:FOR RS=1 TO 12:FOR RT=1 TO 12:FOR RU=1 TO 12:FOR RV=1 TO 12:FOR RW=1 TO 12:FOR RX=1 TO 12:FOR RY=1 TO 12:FOR RZ=1 TO 12:FOR SA=1 TO 12:FOR SB=1 TO 12:FOR SC=1 TO 12:FOR SD=1 TO 12:FOR SE=1 TO 12:FOR SF=1 TO 12:FOR SG=1 TO 12:FOR SH=1 TO 12:FOR SI=1 TO 12:FOR SJ=1 TO 12:FOR SK=1 TO 12:FOR SL=1 TO 12:FOR SM=1 TO 12:FOR SN=1 TO 12:FOR SO=1 TO 12:FOR SP=1 TO 12:FOR SQ=1 TO 12:FOR SR=1 TO 12:FOR SS=1 TO 12:FOR ST=1 TO 12:FOR SU=1 TO 12:FOR SV=1 TO 12:FOR SW=1 TO 12:FOR SX=1 TO 12:FOR SY=1 TO 12:FOR SZ=1 TO 12:FOR TA=1 TO 12:FOR TB=1 TO 12:FOR TC=1 TO 12:FOR TD=1 TO 12:FOR TE=1 TO 12:FOR TF=1 TO 12:FOR TG=1 TO 12:FOR TH=1 TO 12:FOR TI=1 TO 12:FOR TJ=1 TO 12:FOR TK=1 TO 12:FOR TL=1 TO 12:FOR TM=1 TO 12:FOR TN=1 TO 12:FOR TO=1 TO 12:FOR TP=1 TO 12:FOR TQ=1 TO 12:FOR TR=1 TO 12:FOR TS=1 TO 12:FOR TT=1 TO 12:FOR TU=1 TO 12:FOR TV=1 TO 12:FOR TW=1 TO 12:FOR TX=1 TO 12:FOR TY=1 TO 12:FOR TZ=1 TO 12:FOR UA=1 TO 12:FOR UB=1 TO 12:FOR UC=1 TO 12:FOR UD=1 TO 12:FOR UE=1 TO 12:FOR UF=1 TO 12:FOR UG=1 TO 12:FOR UH=1 TO 12:FOR UI=1 TO 12:FOR UJ=1 TO 12:FOR UK=1 TO 12:FOR UL=1 TO 12:FOR UM=1 TO 12:FOR UN=1 TO 12:FOR UO=1 TO 12:FOR UP=1 TO 12:FOR UQ=1 TO 12:FOR UR=1 TO 12:FOR US=1 TO 12:FOR UT=1 TO 12:FOR UJ=1 TO 12:FOR UV=1 TO 12:FOR UW=1 TO 12:FOR UX=1 TO 12:FOR UY=1 TO 12:FOR UZ=1 TO 12:FOR VA=1 TO 12:FOR VB=1 TO 12:FOR VC=1 TO 12:FOR VD=1 TO 12:FOR VE=1 TO 12:FOR VF=1 TO 12:FOR VG=1 TO 12:FOR VH=1 TO 12:FOR VI=1 TO 12:FOR VJ=1 TO 12:FOR VK=1 TO 12:FOR VL=1 TO 12:FOR VM=1 TO 12:FOR VN=1 TO 12:FOR VO=1 TO 12:FOR VP=1 TO 12:FOR VQ=1 TO 12:FOR VR=1 TO 12:FOR VS=1 TO 12:FOR VT=1 TO 12:FOR VU=1 TO 12:FOR VV=1 TO 12:FOR VW=1 TO 12:FOR VX=1 TO 12:FOR VY=1 TO 12:FOR VZ=1 TO 12:FOR WA=1 TO 12:FOR WB=1 TO 12:FOR WC=1 TO 12:FOR WD=1 TO 12:FOR WE=1 TO 12:FOR WF=1 TO 12:FOR WG=1 TO 12:FOR WH=1 TO 12:FOR WI=1 TO 12:FOR WJ=1 TO 12:FOR WK=1 TO 12:FOR WL=1 TO 12:FOR WM=1 TO 12:FOR WN=1 TO 12:FOR WO=1 TO 12:FOR WP=1 TO 12:FOR WQ=1 TO 12:FOR WR=1 TO 12:FOR WS=1 TO 12:FOR WT=1 TO 12:FOR WU=1 TO 12:FOR WV=1 TO 12:FOR WW=1 TO 12:FOR WX=1 TO 12:FOR WY=1 TO 12:FOR WZ=1 TO 12:FOR XA=1 TO 12:FOR XB=1 TO 12:FOR XC=1 TO 12:FOR XD=1 TO 12:FOR XE=1 TO 12:FOR XF=1 TO 12:FOR XG=1 TO 12:FOR XH=1 TO 12:FOR XI=1 TO 12:FOR XJ=1 TO 12:FOR XK=1 TO 12:FOR XL=1 TO 12:FOR XM=1 TO 12:FOR XN=1 TO 12:FOR XO=1 TO 12:FOR XP=1 TO 12:FOR XQ=1 TO 12:FOR XR=1 TO 12:FOR XS=1 TO 12:FOR XT=1 TO 12:FOR XU=1 TO 12:FOR XV=1 TO 12:FOR XW=1 TO 12:FOR XX=1 TO 12:FOR XY=1 TO 12:FOR XZ=1 TO 12:FOR YA=1 TO 12:FOR YB=1 TO 12:FOR YC=1 TO 12:FOR YD=1 TO 12:FOR YE=1 TO 12:FOR YF=1 TO 12:FOR YG=1 TO 12:FOR YH=1 TO 12:FOR YI=1 TO 12:FOR YJ=1 TO 12:FOR YK=1 TO 12:FOR YL=1 TO 12:FOR YM=1 TO 12:FOR YN=1 TO 12:FOR YO=1 TO 12:FOR YP=1 TO 12:FOR YQ=1 TO 12:FOR YR=1 TO 12:FOR YS=1 TO 12:FOR YT=1 TO 12:FOR YU=1 TO 12:FOR YV=1 TO 12:FOR YW=1 TO 12:FOR 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```

## VIC-30 PROGRAM

[illegible]

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Name

Address



## FINAL ADVICE

If your Z801 gets so hot that it will not load (all programs, or some) loads up so much that you have to turn it off, then try my remedy.

The power supply provides much more voltage than is required by the machine and consequently the voltage controller has to dissipate a considerable amount of energy, which it does in the form of heat.

The heat is dispersed by a heat sink, which is a small aluminum plate bolted to the printed circuit board.

I found that this was exactly the reverse, as it is not soldered in place, and is much larger than could ever be in the place.

Then they spread the beans diagonally over the whole of the keyboard area, and that avoids the first spot which causes all the trouble.

I found that after replacing the heat sink, and drilling four quarter-inch ventilation holes in the back of the case, I could leave the machine on for long hours with no harmful effects, whereas before, an hour's running could lead to complete failure.

## How to keep your cool

**Heat can make ZX81s very temperamental. Geoffrey Genever has found a cure.**

What is more, it can be used to help you understand the world around you. For example, if you are interested in the environment, you can use the book to learn about the different types of ecosystems and the animals that live in them. Or, if you are interested in history, you can use the book to learn about the different cultures and civilizations that have shaped the world.



Although replacing the door lock should not damage the machine, you should not open the door of a self-order guarantee, but you void the guarantee.

1. **Wissenschaftliche Grundlagen**

across — asking where they  
came from — and come-as  
from

2 Open carefully, revealing  
surrounding the hypodermid  
cyst(s).

2. Slide the two small bolts holding the printed circuit to the base.

4. Carefully undo the zipper teeth holding the base cord and remove the cord tie.

5 Copy the diagram in aluminum plate the same gauge as the present heat sink, but ensure that the fixing tag, matches exactly that of the old heat sink. There is a very slight bend at the tag to prevent the heat sink from touching the case.

4. Insert the new disk in place of the old and both firmly snap-place. Check carefully, ensure cover is closed.

**T Devil Door** looks as scary as the inside of a sewer ventilation.

■ Replace those taking care again with the hydrated solution.

Finally, if having read this you feel your courage is set up to the job, take heart from the fact that I felt exactly the same before I started it.

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**BBC Microcomputer**

[illegible]**TORCH Computers**

2. All the above are correct.

This unit connects to the BBC Micro in the same way as standard disc drives. But it will accept either a disc 2" 5.25-inch, drive format, either BASIC (BASIC) or other languages. It provides the option of adding the wide range of CP/M software available for running and disc processing operations. The hardware supplied with the machine allows switching between BASIC and CP/M, a powerful operating system developed from CP/M 2.2.

In addition to the disk pack, a hard-disk controller is supplied. This is a PCB with its own SAS RAM card communicating with the SASA in the BBC computer through the bus. Various options are provided in association with programs under the two processor systems. It is possible to use up to 50% compressed with a channel card single processor computer. A third processor (the 15 to 55000) will shortly be available.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

For its introduction of the BBC microcomputer, Tandy also gave Apple's availability as a target on 1. The computer contains a BBC Level 1 processor running on a 68000 chip. It has a 1MB RAM, a 5.25-inch floppy disk drive, and a built-in video card. The system is described above as being available at \$199. Character: color monitor and a complete 800-line Teletext terminal. Improved 1200 baud modem. It is the only microcomputer which has been selected previously for direct connection to the Public Switched Telephone Network both in the U.S. and the United Kingdom.

[illegible]

The TORCH-4 data dissemination system directly with another TORCH-4 unit virtually any other type of computer or system. Using the Gateway facility of Torstar it is possible for the TORCH-4 system user to retrieve information stored by various organizations in public domain systems. The Gateway facility of Torstar also allows the use of interactive input.

TORCH-4 COMMAND	As appear but with a 0 bit read back
TORCH-4 COMMAND	As appear but with a 1 bit read back

[illegible]

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**Table 1**

[illegible]

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## R R C MICRO SOFTWARE

You can also play *Star Wars: The Force Unleashed* on the Wii. The game is a great introduction to the Force, and it's a great way to experience the game's story. The game is a great introduction to the Force, and it's a great way to experience the game's story.

Test 10 is a flipped version of the previous game. This only changes the way things start, not how things are being. Can be played with or without my glove. **Notes:** 1. Graphics and sound. Tested it on 5th grade. 2. 1. Last. Test 1.

A full working paper series (working in libraries) (open in various libraries) & various sections and areas

**Journey to a goal for the Eastern School of Planning is not a minimum game. Travel through oceans and a forest to a level of Monks and help others learn with you and your friends.**

As far as the first control point in Machine Code with a COMPA and SOUND card the player with or without pay seems to have just misinterpreted the text instructions for its density (see Appendix B) instead of (Added to or 32K added to 1.1 user that).

All participants received 120 min of the 100% RPE training protocol. Participants received a 10 min rest period after the 100% RPE training protocol. Participants received a 10 min rest period after the 100% RPE training protocol.

[illegible]

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DRAGON 12/BBC MODEL B/2081 168

## CHAMPIONS!

[illegible][illegible]

1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets.

2020年12月27日 星期日  
 12月27日 星期日  
 12月27日 星期日  
 12月27日 星期日



RESEARCHER: I have been thinking about you a lot since we last spoke. I hope you are well.

[illegible]

**Table 1**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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• **On the sample:** In most cases, you will need to use a sample of the population. The sample should be representative of the population. The sample should be large enough to provide accurate results. The sample should be selected randomly.

## BIT'S SOFTWARE

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

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**Abstract**

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## Adventure game gave me the bird

I am one of the cracks who loves adventure games, so I read all the reviews with interest. Your review of *Paradise Wood* caught my attention, and I duly ordered a copy, but I regret that I cannot share your reviewer's enthusiasm for this particular adventure.

I progressed through the game and into the wood, dispatching various enemies along the way, got through the castle, found the Golden Bird of Paradise, freed it with one quick wave of the magic staff, and returned to Minscape all within two hours.

I did find it rather annoying to be killed — and called a referee, to boot — simply for moving on in the wrong location. I do like a chance to defend myself!

And since you only score points for killing monsters, if you are really clever you can complete this game having scored only about 70 points.

I appreciate that your reviewers probably have limited time, like myself, and wonder whether your intended audience had much difficulty with this particular adventure. I can now get from start to golden bird in about 10 minutes — not very good value to my mind.

Of course I appreciate that it's better for casual, and one man's adventure is another's Sunday afternoon walk.

David Swale, Oxford

Our reviewer says that, as a veteran adventure games, he thinks it's what he said, and would be grateful if David Swale would please tell them how to get one of the birds of the *A House of Toys*.

## My Ti beats the VIC hands down

I am a proud and satisfied TI-99/4A owner. Proud because I own the best home computer under £200. It makes me wonder why people go out and buy a VIC-20 instead.

Both machines are about

**Send your letters to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. There's £5 worth of software for the best each week, so don't forget to name your computer. Queries cannot be answered on this page.**

the same price, but the VIC only comes with 3K of memory. To get it up to 16K will cost you an extra £70.

The Texas cartridges are better quality than the VIC cartridges, and the TI-99/4A is overall a much better computer.

Stanford, because I'm glad to see that Home Computing Weekly has not neglected this machine. You are the first to include programming tips for the TI-99/4A — you could be even more ahead by doing a review of TI-99/4A games.

Could you also give my thanks to Mr Gray and Mr Power for excellent programs? R.P. Buttner, Wrexham, Cheshire

We will be including some software reviews for the TI-99/4A in future issues.

## Oric software troubles, too

I have had the usual problems that others have encountered after ordering an Oric-1. However a few weeks to have gone a stage further.

It is impossible to do a review in issue 2 of your magazine, I ordered *Oric Flight*, after first telephoning Tandy and being assured of immediate dispatch.

I received a confirmation of order dated March 17, and after two more phone calls to Tandy received a cassette. It would not load.

The instructions bore no resemblance to the loading instructions for an Oric, so I returned the cassette, phoning to say I had done so. We will forward you another cassette at once, or, on the reply.

Two more phone calls have been made, with promises of immediate dispatch. Today I am

said that a game was in looking as my cassette and would not load and what was wrong with it.

However my local insurance shop tells me that Oric software from Tandy is not yet available. Have I been conned again by Tandy?

Well, the last laugh must be mine. I was sent a 44K Oric on loan for the price of a 16K, and I shall use all their delivery tactics. I am positive are before I send them another group.

P.A. Foster, Ebbw Vale, South Wales, Fred Knighton, of Tandy, says:

"The original on-line order form we're not producing a program for the Horizon as well as the Oric, and Mr Foster probably got the wrong tape because he didn't specify which machine he wanted a for. Our software currently is available from Tandy — we have hundreds of cassette catalogues here. But even if we made, it does take time to get production running smoothly. We deeply apologise to Mr Foster for the delay he has experienced, and will get the tape off to him right away. I will also be writing to Mr Foster personally."

## A case of mistaken address

We were very pleased to see the review of the program *Star War* and *Bank Dodger* on page 48 of the first issue of Home Computing Weekly.

However our address was printed as 46 Oxford Street, London W1, whereas we are in fact at 146 Oxford Street.

We would be most grateful if you would mention this to your readers.

The Software House, 146 Oxford Street, London W1.

## Connect up a printer

Your review of the Tandy CCR-115 printer states that no serial connection diagrams are included in the manual. The following are the connection details.

### Parallel interface

Plug: Molex Connector  
Pin configuration:



### Serial

Signal pin	Return pin	
1	19	STROBE
2	20	DATA 1
3	21	DATA 2
4	22	DATA 3
5	23	DATA 4
6	24	DATA 5
7	25	DATA 6
8	26	DATA 7
9	27	DATA 8
10	28	ACE
11	29	BUSY
12	—	PE
13	—	BUSY
14	—	OV
15	—	NC
16	—	OV
17	—	CHARGE GROUND
18	—	TV
20	—	OV
21	—	NC
22	—	FAULT
23-25	—	NC



### Pin no

1	not used
2	BUSY
3	CHG (OV)
4	DATA

I have successfully interfaced this printer to my Microbit II using the parallel interface, and have had no problems with it even after hours of hitting out my on-line library of programs. A good inexpensive printer/plotter, indispensable for machine code programmers.

George Hood, Port Swain, East London.









